



The Technique of Inlay Making by the Direct and Indirect Method.

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IV.

The Technique of Taking Impressions — Continued.

Contours of the centrals, laterals and cuspids, require trays of a definite shape and varied in proportion to the extent of the restoration. That portion of the tray which covers the buccal and lingual wall should conform closely to the shape, and should extend beyond the margins of the cavity only enough to insure a right angle pressure against the same. A tray for one case rarely proves available for another, because of two conditions: the buccal and lingual wing of the tray is apt to be too great for one case, and not enough for others. In one case, the right angle pressure is lost, while in the other it becomes difficult to withdraw the impression, sometimes positively preventing it. Hence it is a saving of time and energy (and as time is money, it is a saving of money) to make a new tray for each case.

Fig. 37 shows an upper central, prepared for a porcelain contour corner restoration. Fig. 37a the metal cut to shape, before bending and shaping for the tray. Note the shape of the slits cut on either side. It will be seen that the top of that portion which forms the wing is parallel

ITEMS OF INTEREST

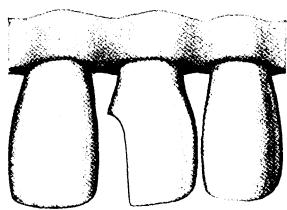


Fig. 37. Labial view.

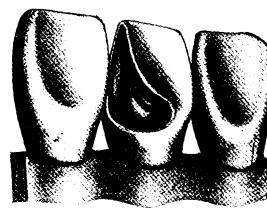


Fig. 37. Lingual view.



Fig. 37a.

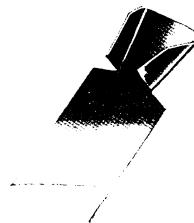


Fig. 37b.

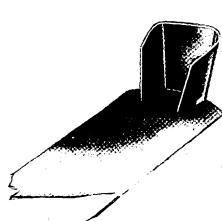


Fig. 37c.

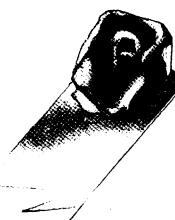


Fig. 37d.

with the base or that part coming in contact with the neck or cervix. An angle piece is cut from the top, or handle, so that when bent at right angles and the wing shaped to the wall (Fig. 37b), it will completely close that portion of the tray at the incisal end, which is a very important item, as any loss of resistance at that point lessens the chance of forcing the compound to a perfect adaptation of the most vital point

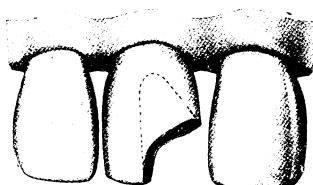


Fig. 38.



Fig. 38a.

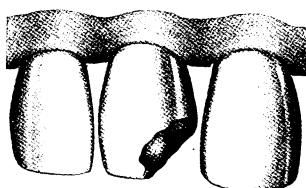


Fig. 38b.

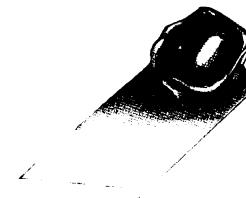


Fig. 38c.

in the filling. I have seen more defective contacts between inlay and tooth at the incisal end, than at any other part of the cavity. Hence this provision.

Fig. 37c shows a tray complete. Care should be taken to prevent an overexcess of compound, and to shape it so as to form a slightly conical shape at the point. Again great care should be given to the surface of the compound. See that it is perfectly smooth, free from seams or overlapping fragments, as they are very likely to cause fissures or very fine ridges along the margins, which produce extremely faulty fillings. The smoother and more symmetrical the lines of the margins are, the more perfect will be the union between the inlay and tooth. Fig. 37d shows an impression of the cavity delineated in Fig. 37.

**Deep Cavities
in Central
Incisors.**

There is another class of restorations in the anterior teeth that require a somewhat different treatment. This class is represented in Fig. 38 which shows a deep cavity requiring extensive contour. It is impossible with the technique of the former case to secure an impression of the deeper portion of this cavity, as the compound is prevented from flowing more than a third of its depth, because of the atmospheric conditions, to overcome which a cone is

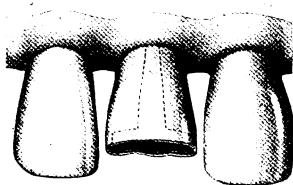


Fig. 39. Labial view.



Fig. 39. Incisal view.

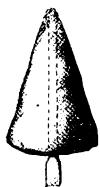


Fig. 39a.



Fig. 39b.

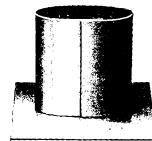


Fig. 39c.

formed a trifle smaller than the cavity (see Fig. 38a) and chilled. The surface is then rapidly heated leaving the center of cone hard. This is forced into the cavity and over the margin, cooled and the bulk of the surplus then cut away as seen in Fig. 38b.

A tray similar to Fig. 37c is filled about two-thirds and chilled. A heavy spatula is now heated over a spirit lamp, hot enough to make the surface of the cone very soft. At the same time heat the surface of the compound in the tray almost to the point of flowing. This must be done very rapidly that there may be enough hard material between the surface and the tray for resistance. This is now forced into position and held until perfectly cold. Remove and you will find what appears to be a one-piece impression. It is well before inserting the cone plug to paint the inside of the cavity with a little tincture of green soap. This will facilitate its withdrawal. If this technique is carried out it will be impossible to detect the union between the two parts. The result is shown in Fig. 38c.

**Deep Cavities
in Pulpless
Central Incisors.**

Another condition for extensive restoration is shown in Fig. 39, where we find the incisal end absent and the tooth pulpless. In this case an iridio-platinum post is fitted to proper depth. Remove this post and attach enough of the compound to fill the bulbous portion of the canal (Fig. 39a) and press it into place as described in the previous case. Care must be taken to avoid any wedging of the post because of taper or too close a fit. It is a good plan to flatten the protruding end of the post as seen in Fig. 39a. A cup is

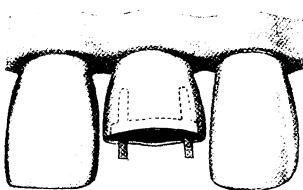


Fig. 40.

made by forming a band to conform to the shape of the end of the tooth uniting the lapped ends with soft solder (Fig. 39b). This band should be about 1 mm. larger than the tooth; that is, 1 mm. space between the band and the tooth and around the entire circumference. This band is soft soldered to a flat piece of the metal as seen in Fig. 39c. Fill the cup even full with compound, heat the protruding end of the pin with a very hot spatula, and at the same time heat the exposed surface of the compound. This is forced to place over the tooth and pin (the post should be longer than required so that a proper length can be adjusted after it is in the die).

**Incisal Cavity
In Vital Tooth.** In case of a vital tooth, where two posts are to be employed for the retention of a similar restoration, the holes should be drilled parallel with one another and at right angles to the surface of the tooth (see Fig. 40). Iridio-platinum wide that will be free enough for easy removal yet at the same time fit close enough to prevent tipping from a parallel position should be inserted, and a cup used such as described for the last case, filled flush. The surface of the compound is heated very soft without heating the pins, but it is not necessary to heat the pins, which become imbedded in the impression.

**Impression
of Root Ends.**

Finally we have to describe the taking of an impression for the complete crown restoration. This is much more difficult than most of those described for partial cases, because the root when prepared is or should be just below the gum margin, and in many cases caries or fracture renders necessary the making or carrying of a portion of the margin even below the edge of the alveolar process. This makes it very

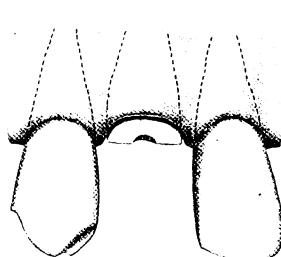


Fig. 41.



Fig. 41a.

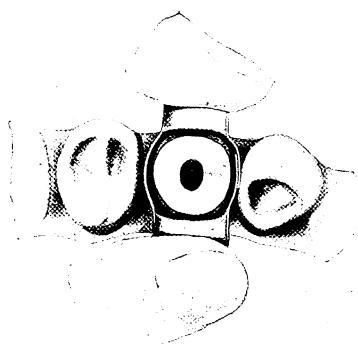


Fig. 41b.

difficult, if not impractical, to secure an accurate impression with a closed cup or tray, as it is impossible to locate the position of the margins of the cup or to know that they are properly festooned to cover the entire circumference of the root. In all cases of irregular root surfaces a compress should be worn from two to six days to force the tissue away from the margins. In case of the six anterior teeth or in some cases of the bicuspids, a temporary crown set with Gilbert's or some other gutta-percha stopping, makes the best kind of a compress and relieves the

patient of the annoyance of being without a tooth. To secure a correct impression of such a case as is shown in Fig. 41, a band is made with a clearance of 0.5 mm. between root and band, and with two ears which

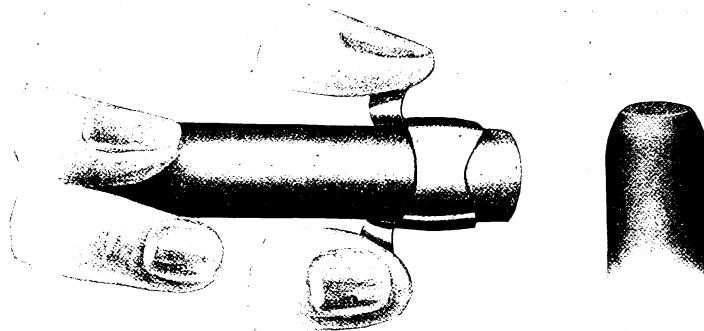


Fig. 41c.

Fig. 41d.

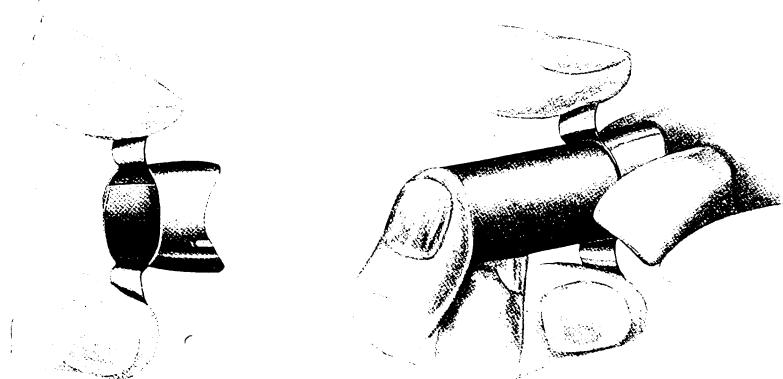


Fig. 41e.

Fig. 41f.

enable the operator to hold it in position (see Figs. 41a and 41b). This tray is bent or formed to the exact shape of the root and festooned to all the inequalities of the circumference, which is often quite a task, but the results more than pay for the time spent. A portion of compound is made to form a plug to pass through the band, and about 3 cm. long. I find the best method of making this plug is to heat the compound so

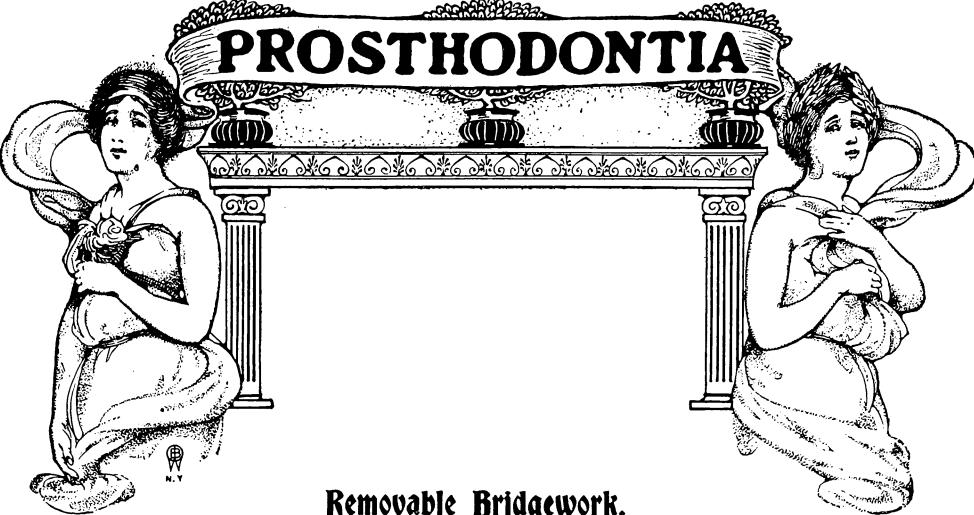


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that it may be rolled on a glass slab and shaped like a round bar, a trifle larger than the band. This is chilled and then the outside is re-heated, but not enough to make it sticky. This is then forced by light pressure through the band as shown in Fig. 41c. One end is then cut with a knife to a bevel as shown in Fig. 41d. The band is now placed in position on the root and held in position with the thumb and first finger of the left hand, pressing upon the ears (see Fig. 41e). Any blood or serum is removed with a pledget of cotton, the taper end of the compound is now heated very rapidly and very soft, then placed in the band, the soft part next to the root and forced to place with the thumb of right hand (see Fig. 41f). If one or more pins or dowels are to be used they should be placed in position before adjusting the band.



PROSTHODONTIA



Removable Bridgework.

By DR. FRED A. PEESO, New York.

Read before the Central Dental Association of Northern New Jersey.

In accepting the invitation to be with you this evening, I made it distinctly understood that I could not prepare a paper, but said that I would give you a blackboard talk instead on removable bridgework and the abutment attachments which in my hands have proven the most satisfactory for a good many years past.

**Removable Better
Than Fixed
Bridgework.**

In regard to removable bridgework I may say that I do not think there is a single instance where fixed bridgework has been used but that removable work could have been utilized to better advantage. From a hygienic point of view there is no question as to which is the better: a bridge that can be removed and sterilized by boiling, or in any other manner which the patient may wish, or a bridge which must be cleansed and sterilized in the mouth. It is impossible to thoroughly cleanse a bridge of this latter type. When a removable bridge is removed from the mouth the abutments are perfectly smooth and symmetrical, and every part can be readily reached with a brush.

In case of an accident or injury to the piece, or trouble with any of the adjoining teeth, it is a simple matter to take it out of the mouth and repair the bridge or to treat any of the adjoining teeth which may be either injured or decayed.



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The abutments for removable work, which I use

Abutments.

most frequently, and which in my hands have proven most satisfactory, are the telescope crown and the telescope crown in combination with the tube and split pin for the back of the mouth. For the anterior teeth, where we use porcelain facings or porcelain crowns, we use the cap with the tube and split pin principally, and occasionally in small pieces what is known as the "inlay attachment." Probably most of you are familiar with the manner in which these different attachments are made; however, I will go over the construction hastily and then pick out a few of the principal points in the technique which should be remembered in connection with this work.

The Telescope Crown.

The telescope crown, as its name implies, is really a telescope consisting of two parts, one telescoping the other. If they are made properly they should fit as accurately as the slides of a telescope.

The value of removable bridgework depends entirely upon the accuracy with which the work is done.

The telescope crown is indicated in the back of the mouth, where the showing of gold is not objectionable, and it very rarely should be carried anterior to the molars, although there are times where great strength is required and where the gold is not likely to be seen, where it may be carried as far forward as the second bicuspid, and more rarely even to the first, but with the bicuspids, as a general thing, it is better to use porcelain.

Parallelism.

In regard to the parallelism of the abutments, it is not really necessary that they should be *exactly* parallel, although they must be very nearly so, so that a bridge may be placed in the mouth with practically no strain on the abutments. There is a slight natural spring to the teeth which can be taken advantage of to help hold the bridge firmly in position. If the natural inclination of the teeth is such that they converge, the teeth can be prepared in such a manner that as the bridge goes into place they are forced slightly apart, springing back to their normal position as the bridge goes home. If they diverge they are sprung slightly together, but this movement must be *very slight*, otherwise it will result in the loosening of the teeth.

Construction of Telescope Caps.

In the making of telescope caps, our abutments are prepared, the bands made and fitted to the stumps and the impression taken and the model prepared in the usual way. After the model has been opened, the band is removed from it and the edges are turned in

slightly at the occlusal end, so that when the piece is completed the edges are slightly rounded (Fig. 1, *a*). This allows the bridge readily to drop in place, which would not be the case if the corners of the cap were left angular. In the making of the bands the best method is to bevel and lap them slightly and then sweat or melt them together. This makes practically a seamless band, and any future soldering operations will not affect the union. The edges of the occlusal end of the band having been turned in slightly, it is filed perfectly flat and a floor of 28-coin gold is sweated to it.



a



b

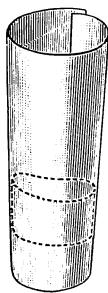


FIG. 2.

The material of which these bands are made for removable work should be of a strong, tough, rigid metal, but still somewhat elastic. The United States coin gold, which is 21.6 carats fine, is one of the best alloys which we can use for these attachments.

When the floor has been attached, the extending edges are trimmed flush with the sides of the band, and when the cap is finished and polished, remember to round the occlusal edges slightly (Fig. 1, *b*). This cap is then pushed into a paper or rubber tube (Fig. 2) and filled with fusible metal, allowing it to extend about one inch beyond the gingival end. This forms a perfectly solid base on which to make our outer cap.

The fusible metal which should be used for this purpose should have a very low fusing point, low enough so that it will melt in boiling water, so that the cap may be removed from this stump without any danger of contaminating the gold. The metal which I have found most suitable for this purpose is made from an old formula of Dr. Richmond's, that was published in one of the dental journals twenty years ago or more.

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Formula for Fusible Metal.

The formula is: Tin, 20 parts; lead, 19 parts; cadmium, 13 parts, and bismuth, 48. This metal is very hard. It does not shrink in the least and fuses at about 160° Fahrenheit. The different metals are not melted in the order of their fusibility, but in the order in which they are given, as they seem to combine best in this way. Care must be taken

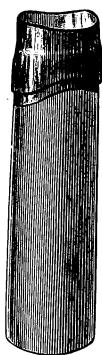


FIG. 3.



FIG. 4.



FIG. 5.

not to overheat them, but just as soon as one metal is melted the next is added to it, and so on until the cadmium is entirely melted. As soon as this is done the fire is turned out and the bismuth is added in pieces, stirring it in with a stick until it is thoroughly melted. If we leave it over the fire while the bismuth is being added the temperature is lowered so rapidly that the metal will be burned and will become worthless.

The Outer Cap.

The measurement for the outer cap is taken just below the rounded edge of the occlusal end and the cap is made and sweated in the manner already described. This is then shaped to and driven over the reinforced inner cap, stretching it and carrying it down to about one-sixteenth of an inch of the gingival end (Fig. 3). It will fit so tight that it will be necessary to burnish it a little in order to remove it. After this it is festooned carefully to follow the gingival outline of the inner cap. The extending edges of the outer band are then trimmed and filed flush with the floor of the inner cap. A floor of number 30 coin gold is then

sweated to it and afterwards trimmed flush with the sides of the band, with the exception of a little in the center of the mesial and distal sides, which is left a little full (Fig. 4).

In making this crown where we have great depth, the contour is restored by building it out on the mesial and distal sides with what we call "contour wings" of 28 coin gold. These are at first attached lightly with a very minute portion of 21 carat solder about one-thirty-second of an inch from the gingival edge of the band (Fig. 5). This is then trimmed and shaped to follow the natural outline of the tooth, as in Fig. 6. After it has been shaped and the edges brought in contact with the band, it is placed on a charcoal block with either the buccal or the lingual face down (Fig. 7). A piece of 21 carat solder is placed in the



FIG. 6.



FIG. 7.



FIG. 8.

opening between the wings (Fig. 7, *a*), and this is melted with the blow-pipe, drawing it down to the edges of the wings and uniting them firmly to the cap. After one side has been soldered it is reversed on the charcoal block and the opposite side is finished in the same way, after which the excess metal is trimmed flush with the floor of the cap and the whole occlusal end filed off perfectly smooth.

**Construction
of Cusp.**

A cusp can be made in any manner desired. It can be carved in plaster or modelling composition and then a pure gold matrix made from this and filled with coin, after which the bottom of the cusp is filed perfectly flat and soldered to the crown. Or the cusp may be carved in wax and cast to the cap or cast and afterward soldered to it with 20 carat solder. After it is finished it presents the appearance of an ordinary contour full crown, but at the same time it fits the inner cap perfectly (Fig. 8). If these crowns are properly made there is practically no wear to them at all. The fluids of the mouth form a coating which really prevents the actual contact of the metals of the two caps, but if they are not accurately fitted, if there is the least bit of play, they are short-lived.

As to the casting of the contours on these telescoping crowns, I would not advise it, although there are some who claim that it can be done satisfactorily. The mass of metal which would be necessary in restoring the full contour of a properly prepared crown would, in the first place, render the crown unnecessarily and undesirably heavy if it were a crown of great length. Also the mass of molten metal used in restoring the contour contracts on cooling to such an extent as to interfere with the fit of the band, so that it cannot be put over the inner, with the result that it has to be trimmed more or less on the inside and cut away with burrs or stones, and the very object which we are working for is defeated, that is, an accurately fitting telescope cap.

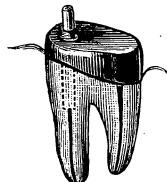


FIG. 9.

This attachment is used where we have two retaining abutments, or where we have but a single retaining abutment of sufficient length, so that we can secure a good, strong, lasting grip.

**Retaining
and Supporting
Abutments.**

Just here I will explain the difference between a retaining and supporting abutment. A retaining abutment is one which not only gives support to the bridge, but which also retains it in position in the mouth, the same as a telescope crown. A supporting abutment is one where we get support from a spur or bar resting in a gold inlay, or on the tooth itself, giving support to the bridge, but at the same time having nothing to do with the retention of the piece in place.

Where we have but a single retaining abutment which is not of great depth, or where we have two retaining abutments which are short, we use the telescope cap in combination with the tube and split pin.

**Cube and
Split Pin
Attachment.**

In the lower jaw you will often find in the third molars, or at times the second molars, such a condition that in order to get a cusp of sufficient depth it will be necessary to cut the tooth almost or quite to the gum line, especially on the distal sides (Fig. 9). In a case of this kind, of course, it would be impossible to

make a telescope crown sufficiently long to get a lasting hold on the inner cap, so that it becomes necessary to use a tube and a split pin in connection with the cap. This tube is generally dropped just to the floor of the pulp chamber, unless the tooth has been cut away a great deal. In this instance, I generally drop it into the canal of one of the roots, just sufficient to get a good grip to hold it (Fig. 9). In the upper molar I would drop it in the palatal root, this being the largest and allowing us to get sufficient depth to give ample strength and retention. In the lower molars the base of the tube depends on the inclination of the tooth, usually

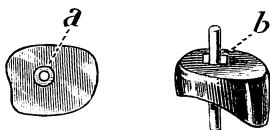


FIG. 10.

being dropped for a little distance into one of the mesial canals; not that it is larger, but the inclination of the tooth is generally such as to make this the most convenient. For these teeth it is rarely necessary that the tube should be more than from one-eighth to three-sixteenths of an inch in length, which is sufficient to give ample retention. The inner cap is made in exactly the same way as for an ordinary telescope crown, the occlusal edges being turned in slightly and a floor of 28 coin gold sweated to it.

The hole in the floor of the cap is made about half again as large as the tube (Fig. 10, *a*). This allows the wax to flow through the floor and around the tube for a short distance, perhaps a thirty-second of an inch, and in soldering the solder replaces the wax (Fig. 10, *b*). The tube being reinforced at this point allows us to counter-sink it, so that in placing the bridge in position, the split pin will readily drop into the opening. Care must be used in placing the tube in position in the cap to see that it is parallel with the sides of the cap, or at least in such a position that when the pin is soldered into the outer cap it can be readily removed from the inner.

In making this adjustment, after the tube has been waxed I always leave the mandrel in the tube; then, by placing the edge of a flat file or other flat instrument on the sides of the band, it will readily show whether or not the outer cap will draw (Fig. 11). If the band is somewhat conical, and as the mandrel and the edge of the file leave the band they

converge, we know that it is all right; but, on the contrary, if they diverge, as in Fig. 12, we will have to change the inclination of the tube. After it has been soldered the excess tube metal is cut off flush with the floor of the cap. This is then finished and filled with fusible metal.

The outer cap is then made the same as for the regular telescope, and if it is long on the mesial side the contour wing of 28 coin gold is attached in the manner already described. The point at which to make

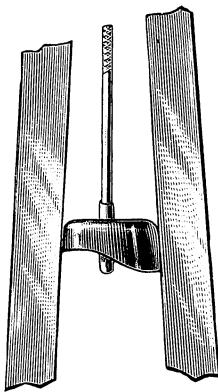


FIG. 11.

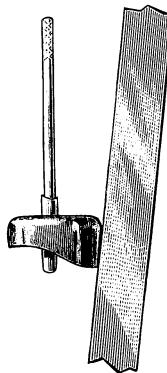


FIG. 12.



FIG. 13.



FIG. 14.

the opening in the floor of the outer cap for the split pin is then located by putting it on the reinforced inner cap and placing it, floor downward, on a soft pine stick and hitting the stump a sharp blow. This will give a clear definite outline of the entrance to the tube (Fig. 13). The entrance to the tube is then cleared with a flame-shaped burr, so that the mandrel over which the tube was made will enter freely. The split pin is next fitted to the tube and the opening in the floor of the outer cap made so that the pin will fit tight. The pin is then waxed firmly in place, removed, invested and soldered with a very small piece of 21-carat solder. The cusp having previously been selected, a hole is drilled through it, so that it will set over the extending end of the pin. The pin is cut so that it extends but a little distance above the floor of the cap. The cap is then filled with investment and the cusp soldered to it by passing the solder through the opening in the cusp and drawing it freely from that point to the outer edges of the cap (Fig. 14). It is then ground and finished, and we have a telescoping crown and at the same time the advantage of the

additional attachment of the tube and split pin, which will hold it firmly in position. These are the two crowns which I have found most useful in the back of the mouth. There are other attachments which I have used, but in the brief time which we have it will be impossible to describe them without making this talk unduly long.

Cube and Split Pin in Anterior Teeth.

In the anterior part of the mouth, of course, it is desirable that no gold be seen, and there we use a cap with a tube and split pin. In these attachments the caps are made exactly the same as for a Richmond crown,

the root being cut well under the gum on the labial side, but not so much as would be the case for a Richmond crown where used as an abutment for a fixed bridge. There are times when it may be desirable, on account of the occlusion, to give this cap a double bevel, but we will consider the cap with a perfectly flat floor.

The cap having been made, the opening is made in the floor for the reception of the tube, which in this case takes the place of the pin for the Richmond. The band should be made so that the sides are parallel with the long axis of the root, and the same care should be taken in waxing the tube in place as in the case of a telescope crown with the tube. It must be made so that when the pin and half-band are in place it will draw readily. The opening in the floor is made large, as in the case of a telescope, so that the solder will flow thick around the tube, allowing of counter-sinking freely. After soldering it is finished and polished. We are now ready for the outer cap.

By following closely the technic of making the outer attachment for this cap we may save ourselves future trouble, as to the manner in which the work is done depends to a large extent the chances of broken facings in the completed bridge. The pin is made to fit the tube easily, but not loosely. In fact, there is no such thing as a loose fit. A loose fit is no fit at all; it either fits or it does not. The floor of the outer cap is made of 28-gauge coin gold, and the hole for the pin should be drilled on the same angle with the floor of the inner cap as the tube, and the pin should fit tightly. This floor is made a little larger than the floor of the inner cap. The pin is waxed to the outer floor, removed and invested for soldering, which should be done with a very minute portion of 21-carat solder placed at the labial side of the split pin. Now we all know that in soldering the tendency of the melted solder is to creep into small places and crevices between the pieces of gold, and if we use a large amount the result in the present case is that when the solder is melted it will draw from the labial side and fill in between the floor and the extending pin in the triangular space at the lingual. The contraction of the solder on cooling will draw the pin and floor together at this point, with the result

that we have changed the plane of the floor (as in Fig. 15—compare *a* with *b*), and when it is placed on the inner cap it will touch heavily on the labial side, but not at all on the lingual (Fig. 16). Now, if we were to leave it without adjusting and solder the facing to the cap, the result would be that the entire force would be brought to bear at that point, with the result that the facing would be broken, as there is no porcelain

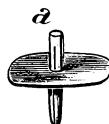


FIG. 15.

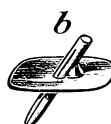


FIG. 16.



FIG. 17.



FIG. 18.



FIG. 19.

made which could withstand such a strain. This is the first danger point. If we see that the condition is such as has been described, the floor of the outer cap should be raised slightly so that it barely touches the floor of the inner cap.

The next danger point is in soldering in the half-band. The outer floor and pin is placed on the inner cap and the floor is trimmed all around flush with the band. The half-band is then made and fitted closely to the lingual side of the inner cap, extending labially just about to the labial side of the split pin (Fig. 17). It is then waxed in place, removed from the inner cap and invested, care being taken to see that the investment fills the half-band perfectly, but on the outer side carrying the investment only high enough to hold the half-band in position and below the line of the floor of the cap.

Now this half-band should also be soldered with a very minute portion of solder, placing it on the lingual side and drawing it around

from that side to both sides of the cap. Here, again, if we use a large amount of solder we will have it filling in between the pin and the floor and changing the plane of the floor, the same as when soldering the pin in place (compare *a* and *b*, Fig. 18). After it has been soldered and cleansed it is replaced on the inner cap and the gingival edge of the half-band trimmed so that it will follow the festoon of the inner cap and come just about to the gum line (Fig. 19). We should also note carefully as to whether the floor is pressing heavily on the inner cap on the labial side, and if it is we should clear it as already described. If we

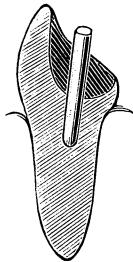


FIG. 20.



FIG. 21.



FIG. 22.



FIG. 23.

have done our work carefully up to this point, there is little danger of our having any trouble with broken facings later.

Next a few words in regard to the inlay with **Inlay Attachments.** the tube and split pin, which I have found useful especially in restoring a missing tooth, such as a lateral or central incisor, or sometimes a bicuspid.

In this case I have found inlay attachments very useful, but, as I have stated, these are especially adapted to the anterior part of the mouth. The tooth to be used as an abutment is devitalized and cut away on the lingual side, so as to allow for the entrance to the tube and also a considerable space around it, which is to be filled in with gold, as in Fig. 20. The tube is placed in the canal, the open end extending a little beyond the incisal edge of the tooth, and the wax is built around this carefully, so as to fit the cavity perfectly. This is carved so as to restore the lingual contour of the tooth, a sprue wire attached and the inlay and tube removed. The tube is then filled with asbestos paper or fiber and then flasked and cast in pure gold, the same as an ordinary inlay, the gold being cast around and attached firmly to the tube. It is then placed in the mouth and ground away so as to clear the occluding teeth and the impression



and bite taken in the usual manner. The inlay is then removed and placed in the impression, the model prepared, and we have the inlay in exactly the same position on the model as it was in the mouth. It is then removed from the model and cut away, as in Fig. 21, deep enough to allow the split pin to clear the bite. This depression is then polished and finished and the split pin fitted to it and carefully bent, so that it will fit into the groove and extend beyond the tooth so that it may be attached to the dummy (Fig. 22). The cavity in the inlay is then moistened or given a thin coating of cocoa butter, the pin replaced and the cavity filled with wax, carrying it well around the pin and into the groove. The sprue wire is then attached, the wax inlay with the pin removed, invested and cast with coin gold (Fig. 23). After cleansing it is replaced in the inlay with the tube and the whole finished and polished. The dummy is then attached to the extending pin and also to the sides of the



FIG. 24.

inlay which is next to the dummy. This forms a most excellent and rigid attachment, and if carefully made will last for a good many years.

Another way of making this second inlay is to first burnish carefully a piece of very thin pure gold, 3 or 4/1000 of an inch in thickness, into the cavity, care being used to have the margin perfect. A split pin is then forced through the thin matrix and into the tube. Hard wax is then flowed into this matrix and around the pin, pressing it tight against the margins. It is then removed, invested and filled with coin gold, after which it is replaced in the first inlay and finished, being attached to the dummy in the same manner as the cast inlay. I think that in this way we can get an even more accurately fitting second inlay than we can by casting.

Tubes and Split Pins. The tubes which are used in this work are made of iridio-platinum, from 7 to 10 per cent. iridium. The inside diameter of these tubes runs from about 60 to 75/1000 of an inch, there being about 3/1000 of an inch difference in the size of each tube. Of course, the sizes are governed according to the size of the tooth. The thickness of the walls of the tubes will run from 6 to 8/1000 of an inch. This tubing can be ordered from any platinum manufacturer, or the tube can readily be made in the laboratory.

For a good many years I rolled my own tubes, using 32 iridio-platinum plate, beveling the edge and rolling it around a steel mandrel. These mandrels were made from regular sizes of Stubb's steel, the numbers running from 48 to 53 inclusive. These mandrels are cut to about 1 and 1½ inches in length and the ends rounded. They can be marked for convenience 1, 2, 3, 4, 5, 6, No. 1 being the smallest and 6 the largest. We first bring the edge of the iridio-platinum to a feather edge and roll it around a mandrel a size smaller than we wish the finished tube to be. Thus, if we wish a No. 4 tube, we would first roll it around the No. 3 mandrel, remove and solder with pure gold. We then drive a No. 4 mandrel through this, stretching it and making it perfectly tight and smooth on the inside. The excess metal is then cut away and the lapping edge is filed perfectly smooth and flush with the rest of the tube. It is then rolled between two smooth surfaces, so as to stretch it enough to allow of its being removed from the mandrel and a floor of the same metal is soldered to it, after which the surplus is trimmed away and filed flush with sides of the tube. This gives us a perfect tube, which is as good as and answers the purpose as well as a seamless tube.

The split pins are made of a very hard and high-fusing platinized gold, half-round wire. This is bent over on itself, as in the illustration (Fig. 24), and soldered at point A with a little coin gold, after which it is hammered together so as to bring the flat sides in perfect contact. This can then be smoothed by running it through a draw-plate and afterwards straightening it and finishing with a burnishing file in a pin vise or in the lathe, being fitted to the tube so that it binds all the way down. The turned end is then filed off until the split is open. The edges are then rounded and smoothed and the pin is ready for use. Where we have a very long pin it is left closed at the end, and then if it is necessary at any time to tighten it in the tube it can be done by just spreading it a little in the center, thus making a long, slender, elliptic spring.

SOCIETY PAPERS



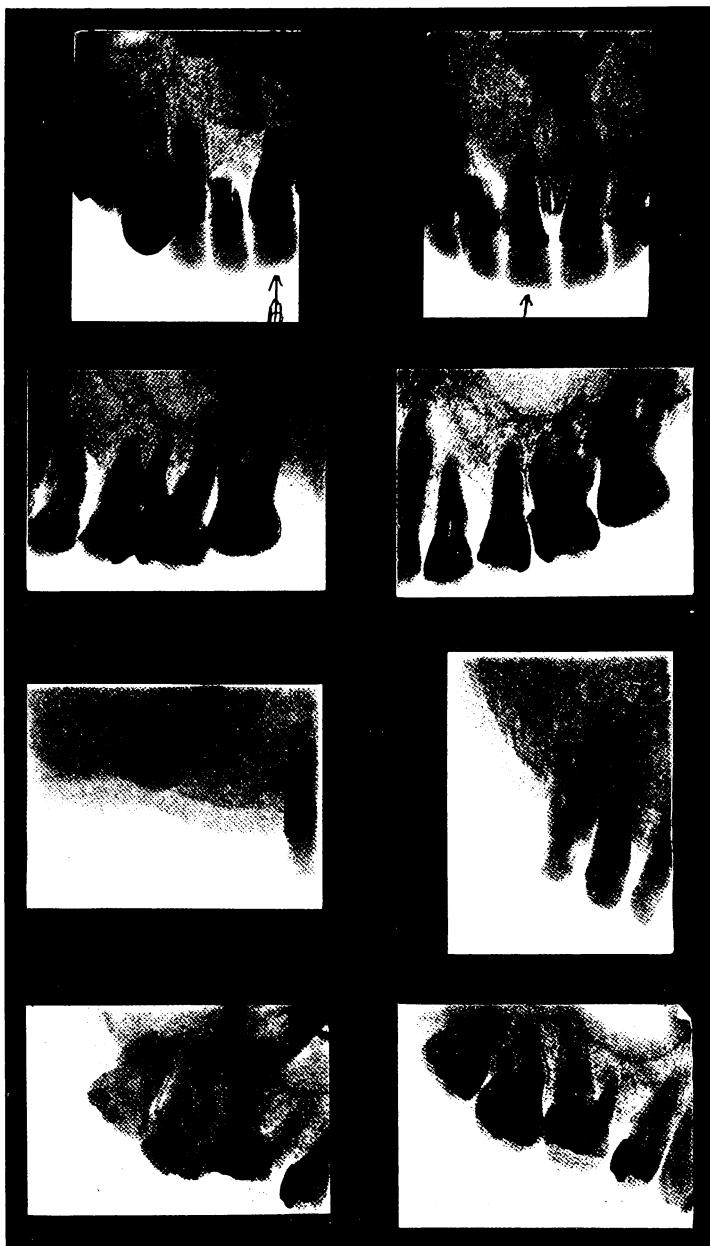
The X-ray in General Dentistry.

By GEORGE M. MACKEE, M.D., New York, Chief of Clinic, Department of Dermatology, Vanderbilt Clinic; Instructor in Dermatology, Columbia University; Consulting Dermatologist and Radiologist, St. Vincent's and New York Nose, Throat and Lung Hospitals; and JOHN REMER, A.M., M.D., New York, Radiologist and Clinical Assistant in Dermatology, Vanderbilt Clinic.

Read before the Second District Dental Society, Brooklyn, New York, Nov. 4, 1912.

This phase of the subject can be dismissed with **Radiotherapy**. a very few words. It has been alleged that the X-ray, together with the high-frequency current and the ultra-violet ray, is not only of service, but can actually cure, without the aid of medicine or of surgery, gingivitis, pyorrhœa and even necrosis of the alveolus. By producing an atrophy of tissue and an endarteritis, it is theoretically possible to favorably affect a chronic congestion of the buccal mucosa by X-radiation. Again, although the X-ray does not act directly upon bacteria, it has been known to so modify the soil, by the formation of local autogenous vaccines, or in other unknown ways, as to seriously interfere with the further activity and growth of pathogenic micro-organisms. This is seen in syphilis vulgaris, acne and other dermatological conditions. It may be added that large doses of the ultra-violet ray, actinic light and the high-frequency spark will kill laboratory cultures of bacteria. It should be remembered, too, that the X-ray is surrounded by an electrostatic field and that the ray may affect the tissues through the influence of ionization.

Practically, however, we have never observed any benefit from the use of these therapeutic agents in the treatment of pyorrhœa, gingivitis or necrosis. Even if these diseases should respond to long-continued radiography, mechanotherapy, phototherapy, actinotherapy or thermotherapy, the expense and time consumed would be out of all proportion to the benefit obtained. In addition, the application of so much X-ray



Figs. 1, 2, 3, 4, 5, 6, 7, 8.



ITEMS OF INTEREST

would lead to undesirable sequelæ. And, finally, there are more scientific and more certain methods of combating these conditions. We do not believe that the X-ray should be considered even as a supplementary measure. Therapeutically considered, the only value the X-ray has in dentistry is in the treatment of malignant neoplasms and even here it should be considered subordinate to surgery.

No field of scientific endeavor, no branch of **Radiography**, medical science, has made greater or more successful advance than radiography. The improvement in

apparatus, the increased experience of the radiologist and the perfection in technique enable one to produce results that are indispensable to the scientific dentist. It is now possible to detect not only the presence of unerupted teeth, but to ascertain their exact position. Disturbances in the alveolus can be diagnosed as pyogenic necrosis, cystic degeneration, syphilis, tuberculosis, malignancy, etc. Details of the anatomical structures of a tooth can be studied. Thus, information regarding the pericementum, pulp canals fillings, etc., can be obtained. Finally, disturbances in the antra can be detected; the relation of the teeth to these cavities can be ascertained; and so we might proceed almost indefinitely.

We will not enter into a discussion of the **Technique**, details of technique, but simply point out a few important facts.

In the first place it does not suffice simply to place a film behind a tooth and make a radiograph. It will not do even to obtain a well-defined image of a tooth in a radiograph that is free of distortion and other artifacts. Several radiographs must be taken so as to study an area from various angles and to obtain an image of the different roots of a tooth.

Figs. 1 and 2 represent radiographs of the left upper central taken at different angles. In Fig. 1 the peg appears almost to perforate the tooth, while in Fig. 2 it is seen to be centrally placed. Other points of interest in these radiographs are the necrosis of the alveolus around the left lateral and a fracture of the tooth itself (patient referred by Dr. A. H. Merritt. In Fig. 3 the molars appear to have only two roots, while in Fig. 4, which represents the same teeth examined at a different angle, the molars are seen to have three roots (patient referred by Dr. W. W. Walker). Fig. 5 shows a bicuspid with but one root; Fig. 6 depicts the same tooth with two roots. Fig. 7 shows only two of the roots of the first molar, while three are depicted in Fig. 8 (patient referred by Dr. A. W. Bark).

There are, of course, instances where it is necessary to study only a very small area, but as a rule it is preferable to obtain information regarding a large rather than a restricted area. For this reason we prefer to employ both film and plates in many of our cases. Not infrequently information will be elicited by the study of a plate that could not be detected on a film. On the other hand, in many instances, the film may prove of greater value than the plate. At times it is possible



Fig. 9.

to obtain a better plate than a film radiograph, while on other occasions the reverse is true. There are instances, too, where it is impossible to obtain the desired result by any method. In such cases one must simply do the best he can and hope to produce radiographs, a careful study of which will allow of a diagnostic opinion.

Fig. 9 is a plate radiograph of the mandible. It depicts an impacted third molar and an unerupted bicuspid with cystic degeneration or pressure absorption around its crown. A previous radiographic examination by the film method had failed to elicit these points (patient referred by Dr. George B. Palmer).



Interpretation. It is the duty of the radiologist to elicit in every case, regardless of the size of the fee, all the radiographic information that is possible. The character of the radiographs must be the best that can be obtained in a given case. Films, if possible, should be employed; not one but several, the exposures being made at varying angles. Plates, too, should be utilized whenever it is thought they will prove of value. The amount of work to be done, the manner in which it should be accomplished the judging of the character of the work, etc., can, with safety, be left to the conscientious radiologist.

It is manifestly unfair for a dentist to judge the ability of a radiographer by the character of his work in any given case, or to compare the results of one case with those obtained in another case. To justly criticise the quality of a radiograph one must be acquainted with all the circumstances under which the examination was made, particularly whether or not the patient was a favorable subject. To compare the average work of one man with that of another is just, because the law of averages is reasonably accurate.

Now, to proceed with a discussion of interpretation; the radiographs are properly illuminated and carefully studied, preferably in the presence of the dentist who referred the case. When this is not possible a typewritten opinion should be sent to the dentist with a duplicate set of radiographs. This opinion should be radiographic and not clinical. In other words, inasmuch as radiography, like other branches of medicine, is not an exact science, it is the duty of the radiologist to differentiate between artifacts, anatomical and pathological conditions, from a radiographic standpoint; a clinical construction or deduction can then be formulated by the dentist. Prints should never be relied upon because they contain too many artifacts and a great deal of detail is lost in the process of reproduction.

Relationship Between Dentist and Radiologist.

As the position of the radiologist is that of a consultant, the opinion should be confidential. No opinion nor information relative to the results of the examination should be transferred directly from the radiologist to the patient. What the dentist desires to tell the patient is none of the radiologist's business. At times it is and at other times it is not a good idea for the dentist to acquaint the patient with the radiographic findings and the final clinical deductions. The dentist should follow his own judgment as to whether or not the radiographs should be

demonstrated to the patient, but we feel that it is unwise to allow the radiographs themselves to fall into the patient's hands, for the radiographs would be subjected to faulty interpretation by unscrupulous dentists and physicians and even by well-meaning but misguided individuals. If, after a radiographic consultation, the patient prefers to be treated by another dentist, we feel that the new dentist should, through courtesy, be allowed to examine the radiographs and obtain an opinion from the radiologist without compelling the patient to pay an additional fee.

At this moment we are not ready to discuss the legal side of the question, but we do not feel that the patient has any right to demand the radiographs. They are not photographs, nor are they exact records. They may be compared to the diagrams, tracings, notes, etc., made by a diagnostician in any other branch of medicine. After being made and studied, an opinion is expressed and it is this opinion that the patient pays for. We believe that these records (radiographs) are the property of the radiologist. The dentist should see them by all means; first, for his edification and, second, because many dentists become extremely expert in interpretation and often materially add to the information advanced by the radiologist. But we doubt if any dentist, no matter how experienced (unless he is a radiologist) should attempt radiographic interpretation without the guidance of the experienced radiologist. These are our ideas of medical ethics as pertaining to this particular branch of work and to help the radiologist maintain this stand it is advisable that patients be sent in consultation or for a radiographic examination rather than for the purpose of having a "picture" taken.

After this rather lengthy preface we will enter into a discussion of the various conditions, information of which can be elicited by the radiologist. It might be well to begin by explaining one or two special methods utilized in radiographic examinations.

Stereoscopic Radiography.

Stereoscopic radiography consists of two radiographs taken at different angles and viewed as one through the aid of a stereoscope. In principle the process does not materially differ from stereoscopic photography. Briefly, the operation consists, first, of the arrangement of the patient for an ordinary radiograph. The tube is then shifted $1\frac{1}{4}$ inches to one side and the exposure made. The tube is next moved $2\frac{1}{2}$ inches in the opposite direction and the second exposure made. Obviously the patient must not move during the entire procedure and the relation between the patient and the position of the plate and the distance of the tube from the plate must be the same for both exposures.

The two radiographs are now placed in a stereoscope and perspective obtained. By the ability to "look around the corners" and the obtaining of true perspective, stereoscopic radiography will elicit information impossible to ascertain by regular radiographic methods. Take, for instance, an unerupted cuspid. A radiograph will determine its presence, its anatomical and pathological characters and the condition of the surrounding alveolus. It will also give its lateral position; that is, it will be possible to determine whether the tooth occupies an oblique, horizontal or vertical position, or whether or not it overlaps another tooth. It will



Fig. 10.

not, however, ascertain the antero-posterior position. It would be impossible, for instance, to tell whether the cuspid were anterior or posterior to the lateral. As it is impossible to take accurate antero-posterior and lateral views of a tooth, it becomes necessary to resort to stereoscopic radiography to obtain this information. This process is also of service in determining the depth and exact location of cavities in the alveolus and the relation of teeth to these cavities. In cystic degeneration, for instance, a radiograph may depict the apparent involvement of several apices, while stereoscopically these apices may be shown to be outside of the cavity. In this manner, also, important information may be elicited regarding the relation of certain teeth to the antra. It might be added here, that if the technique is perfect and if the plates are studied by one who has had the necessary experience, the results are reasonably accurate.

Fig. 10 represents a stereoscopic set of radiographs taken through a head in the antero-posterior position for the purpose of examining the nasal accessory sinuses. If this illustration is viewed in an ordinary parlor stereoscope true perspective will be obtained. Viewed as printed the frontal sinus will appear very close; that is, one is looking through the head from the front. If the images are separated and reversed, then one will look through the skull from behind and the frontal sinus will appear in the distance. Fig. 11 represents a stereoscopic radiographic examination of an unerupted cuspid. Viewed as printed one is



Fig. 11.

looking from the front and the cuspid will be seen to be behind the lateral. On the other hand, if the images are reversed, one views them from "within the mouth" and the cuspid is seen to be closer than the lateral so that the cuspid is lingually situated in its relation to the lateral (patient referred by Dr. F. A. Gough).

**Plastic
Radiography.**

Plastic radiography has received more attention than it deserves; it has very little practical value. The process consists of making a transparency from a radiograph, placing the film surfaces of the two plates in contact, obtaining exact registration of the images and printing through both plates at an angle of about 45 degrees.* This produces a slight overlapping of shadows or shading, which in turn gives a false sense of perspective or relief, much in the same manner as a sign painter

*This process was described in detail by one of us (MacKee) in the *Dental Brief* for May, 1908. The two illustrations of the foot herewith published are from that article.

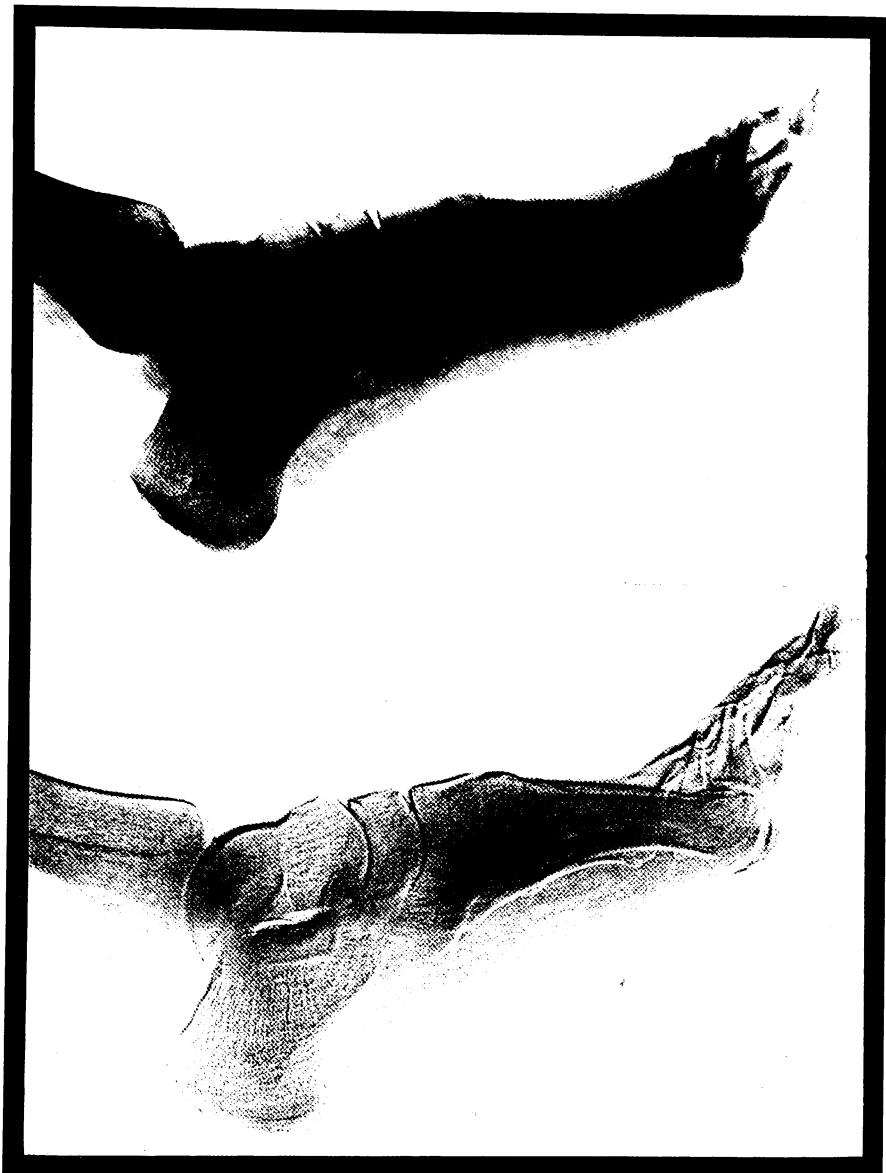


Fig. 12 and Fig. 13.

makes the letters appear to stand out from the flat surface upon which they are painted. It should be obvious that no more can be obtained than is on the original plate. Careful thought, however, will make it clear that the shadows of the positive and those of the negative are the opposite in densities, so that contrast is lessened and detail increased in the print. Inasmuch as radiographs are notoriously hard to print



Fig. 14.

the process is of some value in obtaining superior prints. The amount of time and work is considerable, which, added to the facts that other and simpler printing processes are equally satisfactory regarding detail, and that the prospective obtained is false and misleading, make the process of no value except as a curiosity which produces pleasing, artistic effects.

Fig. 12 is a radiograph of a foot. Fig. 13 is a plastic reproduction of this same radiograph. Fig. 14 is an example of a plastic radiograph of the mandible and the upper molar region of the same side. It depicts several unerupted teeth and dental orthopædic appliances (patient referred by Dr. George B. Palmer).

We will now briefly consider the dental conditions that frequently demand a consultation with the radiologist for the purpose of diagnosis, confirmation or information.

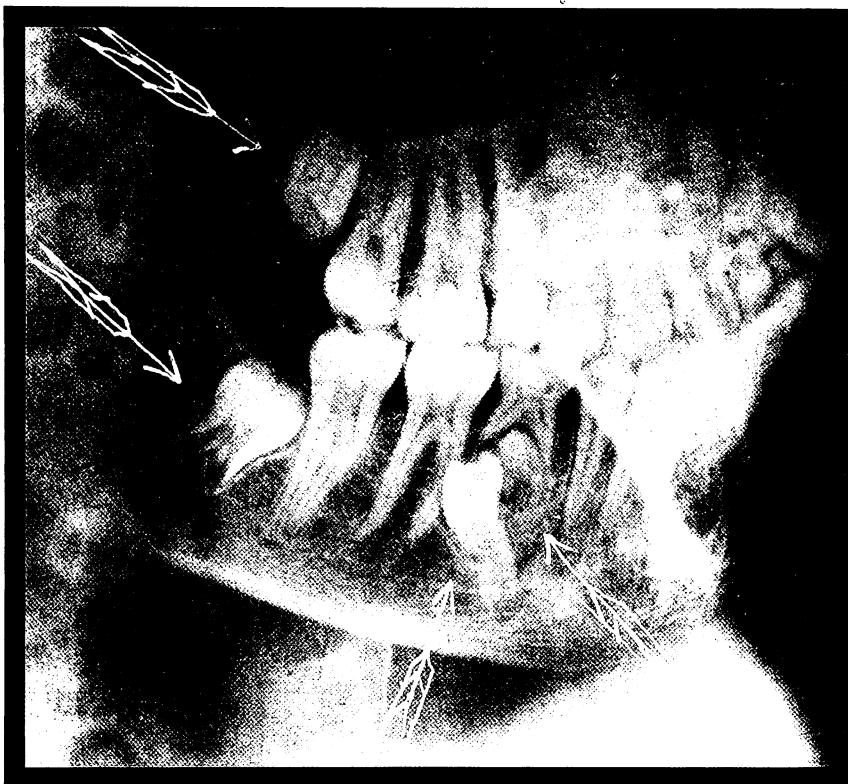


Fig. 15.

Not infrequently we are asked to determine the presence of an unerupted tooth; and information regarding its condition and position is of some importance. Quite often a swelling and a discharging sinus are the result of an unsuspected supernumerary or an impacted, unerupted tooth.

Fig. 15 shows the results of a radiographic examination of the mandible and the upper molar region of the same side. Unerupted upper and lower third molars are seen; the permanent lower bicuspids are depicted (patient referred by Dr. W. C. Deane). Fig. 16 demonstrates an unerupted tooth which has assumed a horizontal position and

which is surrounded by an area of necrosis. A sinus may be seen extending from this abscess cavity to the cuspid region. It is probable that this radiograph represents an example of an infected cyst (patient referred by Dr. M. Schneer).

Foreign bodies may be found in the alveolus, in the teeth, or in the soft tissues. Pulp stones are often radiographically depicted. Occasionally a

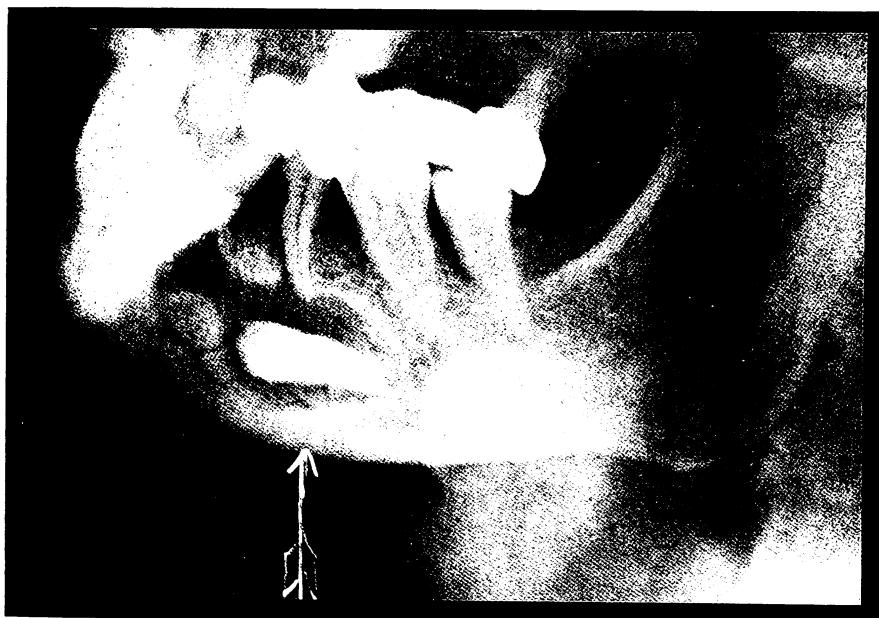


Fig. 16.

tooth will be found to have been perforated, with gutta-percha forced into the alveolus. A sequestrum may be demonstrated and bismuth, which has been injected into an abscess cavity, will, of course, show very plainly. Pieces of instruments are occasionally found in the teeth. Salivary calculi may also be demonstrated.

Fig. 17 depicts a root of a right upper central surrounded by an area of necrosis. The apex has been perforated by a cone of gutta-percha; a cone of gutta-percha or a piece of metal may be seen in the alveolus pointing toward the lateral; the other black shadows are caused by bismuth paste that has been injected (patient referred by Dr. A. H. Merritt). Fig. 18 shows a perforation by a peg, with a piece of gutta-percha in the area of necrosis which surrounds the tooth. Another

piece of gutta-percha is shown just beyond the apex. Fig. 19 shows a piece of instrument at the apex of the palatine root of the first molar. It also depicts an area of necrosis apparently involving the bicuspids



Fig. 17.



Fig. 18.



Fig. 19.

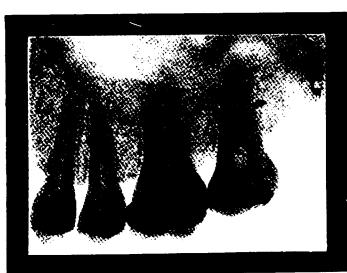


Fig. 20.

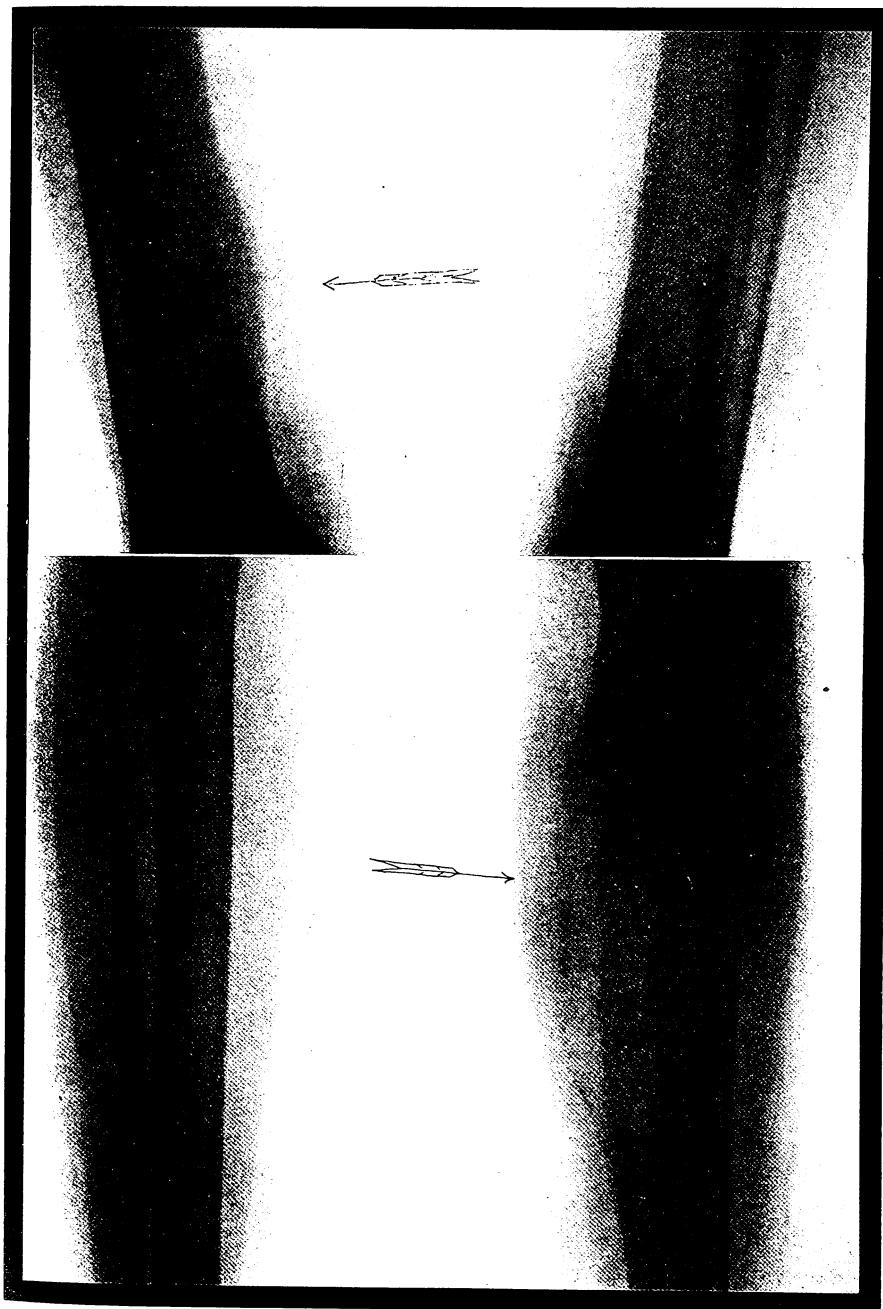


Fig. 21.

and cuspid. Fig. 20 shows probable pulp stones in the pulp chambers of the first and second molars. Fig. 21 depicts an old root in the alveolar process to the left of the molars.

New Growths. Under the heading of new growths we may, for convenience, consider several diseases.

Syphilis is determined by a primary prolifera-



Figs. 22 and 23.



Fig. 24.

Fig. 25.

tive periostitis producing a pyramidal-shaped swelling; osteitis is always secondary except on rare occasions when the disease affects the cartilaginous extremities of bones. As a rule the affection begins at some distance from the epiphysis.

Fig. 22 is an example of an early stage of syphilitic periostitis occurring in the tibia of an adult. There is practically no necrosis. Fig. 23 shows advanced syphilis of the tibia of a child. Besides the extensive involvement of the periosteum there are areas of necrosis

scattered throughout the bone (patient referred by Dr. John A. Fordyce).

Tuberculosis begins as an osteitis in or very close to the epiphysis; there are usually multiple foci; periostitis when present is secondary and not of the hyperplastic type.

Fig. 24 represents multiple foci of tuberculosis involving the epiph-



Fig. 26.

ysis of the tibia; an early and well-treated case (patient referred by Dr. T. H. Myers). Fig. 25 shows an advanced type of tuberculosis. Here, new bone has been produced as the disease has progressed up the shaft of the radius from its origin in the epiphysis (patient referred by Dr. George D. Stewart).

Sarcoma. This disease causes complete loss of bone. The involved area is usually extensive and the advancing margin is irregular. Progress is rapid. The radiographic findings are usually rather startling; the disease causes a large, hard tumor, yet the radiograph depicts complete loss of mineral matter; a complete disappearance of bone.

Fig. 26 illustrates sarcoma of bone involving the ramus, angle and

ITEMS OF INTEREST

part of the body of the mandible; the ramus has been completely destroyed (patient referred by Dr. H. S. Dunning).



Fig. 27.

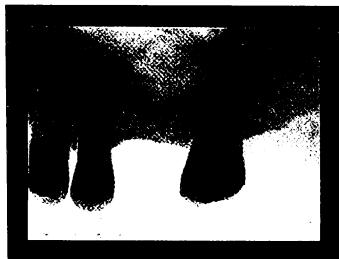


Fig. 28.

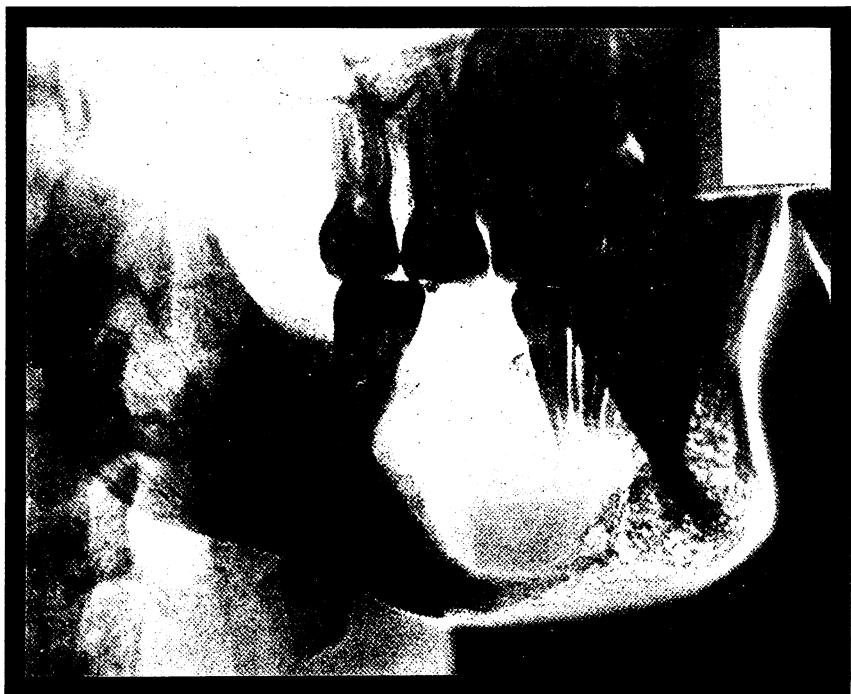


Fig. 29.

Carcinoma. Epithelial tumors of bone are usually secondary, having spread from the soft tissues by metastasis. The radiograph shows irregular, extensive and rapid-developing necrosis without the entire loss of the mineral elements as seen in sarcoma.

Osteoma. Exostosis produces a circumscribed, dense, homogeneous shadow.

Fig. 27 illustrates a probable exostosis or osteoma apparently involving the root of the bicuspid (patient referred by Dr. N. B. Potter). Fig. 28 depicts a possible osteoma of the floor of the antrum (see also Fig. 38).

Cyst. Benign cystic degeneration of bone shows, radiographically, complete loss of substance. The area is sharply circumscribed, the margin being smooth and regular. If the condition is one of dentigerous



Fig. 30.

cyst, an unerupted tooth, or its remains, may be seen lying in the cavity. If the cyst has become infected, the shadow is likely to possess both the characteristics of a cyst and those of pyogenic necrosis; that is, the margin may be somewhat irregular and the shadow represents greater density than is seen in a pure cyst. In this connection it might be stated that an empty cavity will produce a denser shadow than one that contains fluid, but even in the latter instance the shadow will be less dense than that of the surrounding bone and there will be a loss of bone detail.

Fig. 29 shows a very large cyst of the mandible involving the regions of the first molar and the bicuspids. Pulp stones may be seen in the pulp chambers of the first and second superior molars (patient referred by Dr. T. P. Hyatt). Fig. 30 depicts a cyst in the upper molar region.

Odontoma. This condition produces a very dense shadow. It is homogeneous and is usually well marginated. The margin is not regular in outline and the tumor mass is likely to be divided and subdivided by fissures. In addition, the remains of an unerupted tooth may be detected.

Fig. 31 represents an odontoma in the molar region of the mandible. The remains of a tooth may be seen lying in the lower part of the tumor near the angle of the jaw (patient referred by Dr. W. J. Lederer).

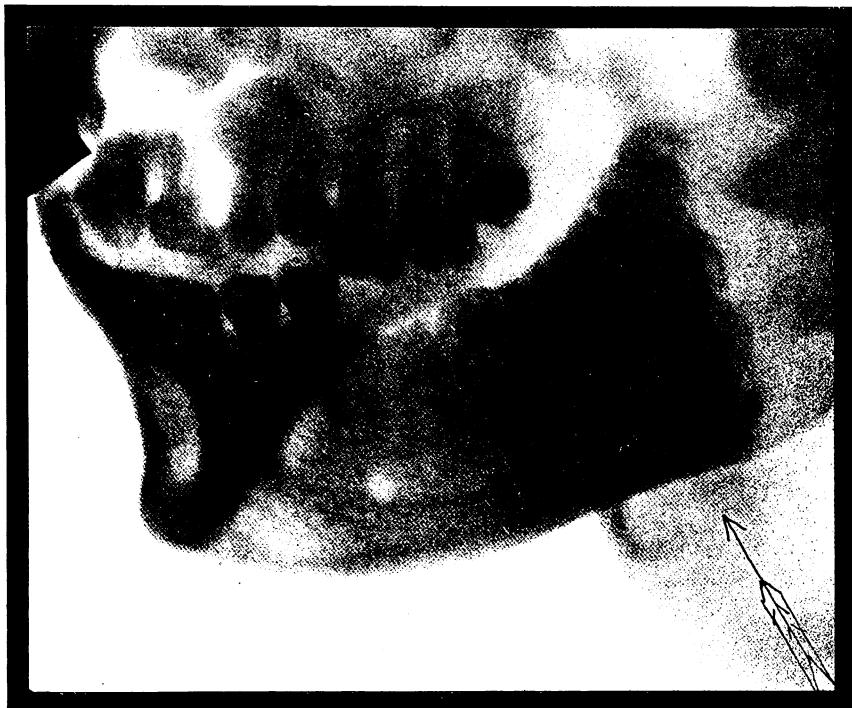


Fig. 31.

We have already considered syphilitic, tuberculous, cystic and malignant degeneration. There remains the discussion of necrosis resulting from pyogenic infection. This type of necrosis is usually represented by a circumscribed area around the apex of a tooth. The radiographic picture is one of lessened density or loss of substance. The margin is not as sharply defined as in the case of a cyst, unless nature has produced a thickening of bone around the cavity. The margin, also, is likely to be somewhat irregular. When the necrosis is extensive a sequestrum is often depicted. If there is a cavity which is filled with pus, the shadow, of course, will show greater density, but here, as in

Necrosis.

the case of a cyst which contains fluid, the area is less dense than the surrounding structures and there is absence of bone detail. Shadows indicating less density around the apex of a tooth are not always to be interpreted as actual cavity formation, as rarefied bone, or a loss of mineral substance, or scar tissue, may simulate a cavity. In this way, even an old process which has completely healed may cause confusion.



Fig. 32.



Fig. 33.



Fig. 34.



Fig. 35.

Absorption of bone by pressure as, for instance, is sometimes seen around the crown of an unerupted tooth, has the appearance of a cyst. Pyorrhœal necrosis or absorption is found around the necks of the teeth and may, of course, extend along the roots and involve the apices.

Fig. 32 shows necrosis of the alveolus around the left central with necrosis of the root itself (patient referred by Dr. H. W. Northrop). Fig. 33 depicts a deciduous cuspid with absorption of its apex. There is a sinus extending from the apex of this tooth obliquely upward to

an area of necrosis around an unerupted permanent cuspid. Fig. 34 shows the permanent cuspid (patient referred by Dr. A. R. Starr). Fig. 35 demonstrates an area of necrosis involving the apices of the right central and lateral. There is atrophy of the central and a small piece of filling may be seen in the upper part of the abscess cavity



Fig. 36.

(patient referred by Dr. M. F. Egel). Fig. 36 represents pyorrhœal necrosis around the roots of the lower molars and bicuspids (patient referred by Dr. A. H. Merritt).

**Diseases
of the Antra.**

The antra cannot be satisfactorily examined with film radiographs, nor by the use of a plate with the head in the lateral position. By these methods the floor of the antrum may be studied and, also,

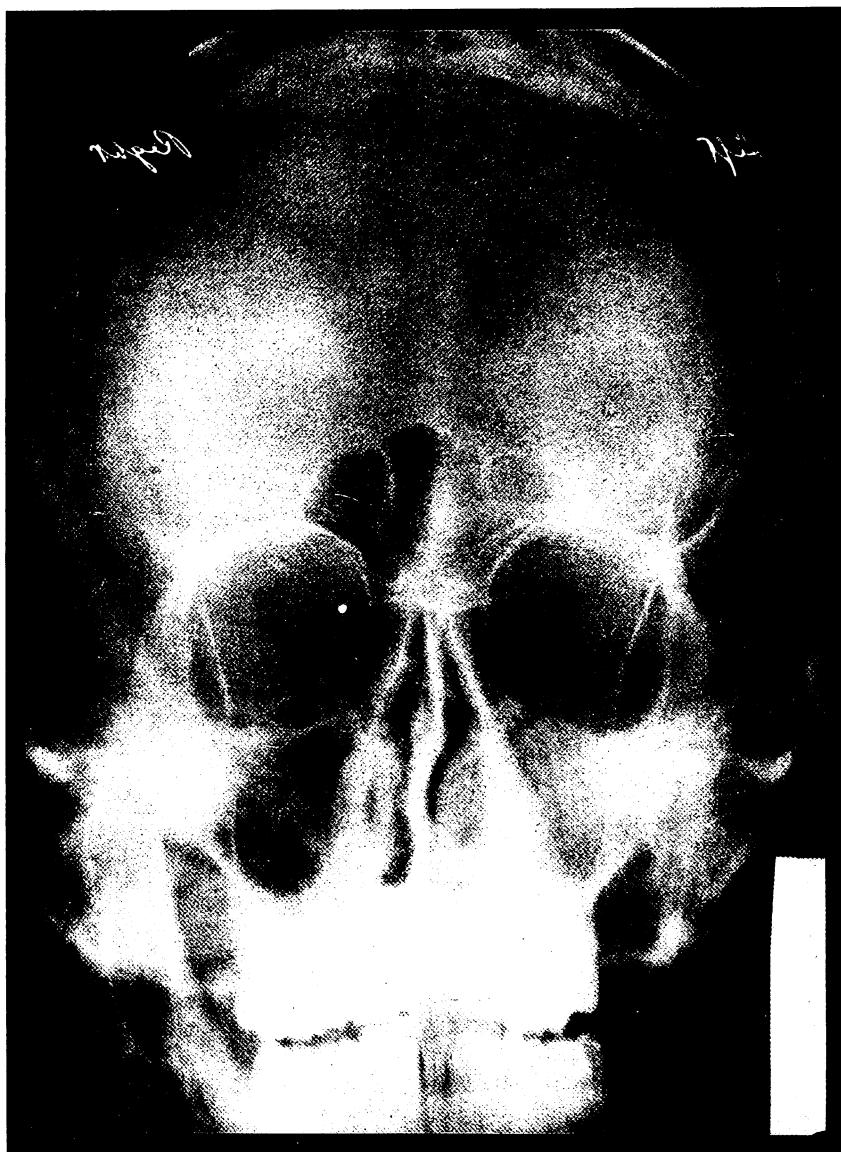


Fig. 87.



Fig. 38.

the relationship existing between the teeth and the antrum. But to accurately determine whether the antrum is or is not diseased requires an examination of the head in the antero-posterior direction. This will include the nasal cavity, the antra, frontals and ethmoids. In this way it is possible to diagnose suppuration or the presence of new growths in the antrum.

Fig. 37 represents a radiographic examination of the accessory sinuses of the nose. The left antrum, ethmoids and frontal are seen to be diseased. The nasal septum is deviated (patient referred by Dr. W. J. Lederer). Fig. 38 shows the head in the lateral position and depicts

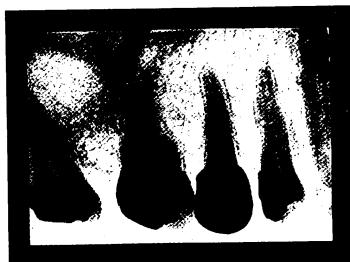


Fig. 39.



Fig. 40.



Fig. 41.



Fig. 42.

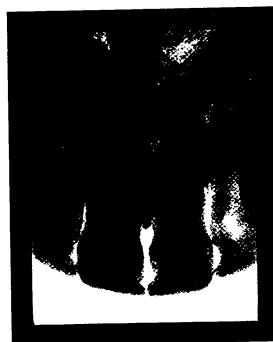


Fig. 43.



Fig. 44.



Fig. 45.

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Fig. 46.

the antrum to be occupied by a growth of bony consistence, probably an osteoma (patient referred by Dr. G. H. McFadden).

Fillings. Gutta-percha and all metallic fillings are, of course, more or less impervious to the X-ray and cast dense shadows. It is possible, therefore, to obtain information regarding the extent and character of a filling, a peg, etc.

Fig. 39 shows that the filling has apparently passed through the apex of the palatine root of the first molar and has curved back upon itself (patient referred by Dr. A. R. Starr). Fig. 40 depicts very delicate wires in the roots of the first molar. Two wires reach the apex of the anterior root which is surrounded by an area of disturbance in the alveolus. One wire passes to within one-fourth of an inch of the apex of the posterior root. Beyond this point the pulp canal is occluded, presumably by products of degeneration or calcification (patient referred by Dr. A. R. Starr). Fig. 41 shows the lower centrals to be filled almost to their apices. The pulp canals at the apices are occluded, the teeth at this point have undergone absorption and they are surrounded by necrosis of the alveolus (patient referred by Dr. M. L. Collins). Fig. 42 shows a right lateral with a patulous pulp canal, the apex of which has been absorbed and there is an area of absorption in the alveolus. The pericementum can be followed about halfway up the tooth; beyond this point it has been destroyed. The right central appears to have an area of necrosis around its apex, but this is shown (Fig. 43) to be an error, as the "area of necrosis" is simply the lower end of the nasal cavity (patient referred by Dr. W. B. Dunning). Fig. 44 shows filling in the pulp chamber, then an apparently empty space and the end of the tooth is filled with gutta-percha which has penetrated into the area of necrosis around the apex.

Pulp Canals. Satisfactory radiographic examinations of the pulp canals are often associated with considerable

difficulty, particularly in elderly subjects or where there has been degenerative changes. Teeth that are more or less rotated, and superimposed shadows, are additional difficulties that must be frequently overcome. At times it is impossible to elicit the desired information in the case of the upper molars. Even the bicuspid, if the tooth has two roots, the shadows of which overlap, may necessitate several radiographs before it can be ascertained if the pulp canals are patulous or occluded by calcification. It is, of course, desirable, where a tooth does not appear to possess a pulp canal, to determine if this appearance is due to overlapping shadows, artifacts, filling or calcification. Sometimes this information can and at other times it cannot be elicited.

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FIG. 47.



Fig. 48.



The length of a tooth or of its pulp canal can be only approximately determined by radiography. Greater accuracy is associated with the placing of a probe or wire in the tooth before the radiograph is taken, determining by inspection how near the tip of the wire is to the apex and then by measurements, deducting an allowance for distortion, some idea of the length of the tooth may be obtained (Fig. 40). Even this method is inaccurate, but it is, nevertheless, reasonably practical. In spite of published statements to the contrary, we believe it is impossible to accurately measure, in any direction, either erupted or unerupted teeth, by means of radiography. Information regarding whether a tooth is or is not curved is, of course, easily ascertained.

Fig. 45 shows a second bicuspid with a curved root. The pulp canal is depicted for only a short distance. The tooth is surrounded by an area of disturbance in the alveolus (patient referred by Dr. W. B. Dunning).

We are frequently asked to determine if a tooth is or is not dead. In some instances this is a very easy task, especially where there is necrosis of the alveolus or the pulp canal is greatly modified. In many instances, however, we have been unable to detect any change from the normal in teeth that are known to be dead.

We have spent considerable time in studying the pericementum and other anatomical elements that compose the tooth entity in health and disease, but we have not as yet acquired knowledge worth reporting.

Fractures. Fractures of both the teeth and of the maxillary processes can be readily detected. Valuable information regarding the character and extent of the fracture, as well as the tissues involved, can be elicited.

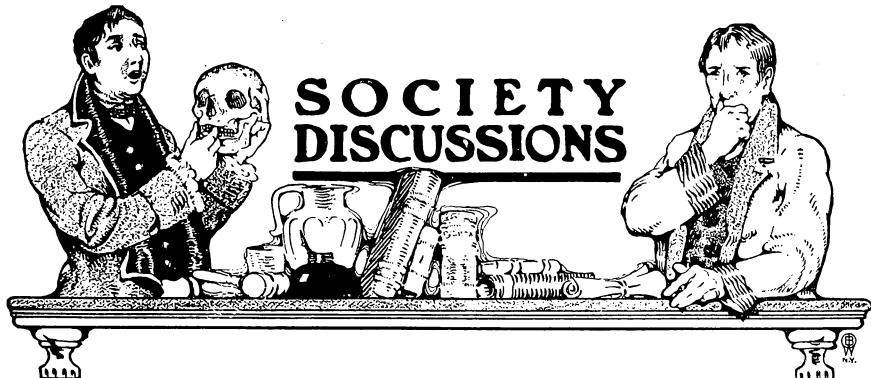
Fig. 46 depicts a fracture of the body of the mandible, with necrosis, a sequestrum and a sinus. The teeth are wired together to act as a splint (patient referred by Dr. H. S. Dunning). Fig. 47 shows a comminuted fracture of the body of the mandible caused by a bullet. The numerous black shadows represent pieces of lead (patient referred by Dr. H. S. Dunning). Fig. 48 shows a pathological or spontaneous fracture due to extensive necrosis of the mandible (patient referred by Dr. H. S. Dunning).

Temporo-Maxillary Articulation. This is a difficult articulation to satisfactorily examine because of the difficulty of avoiding superimposition of shadows. If the joint is radiographed from below, the vertebrae must be avoided; if from above care must be taken to throw only the shadow of the brain and

smooth portion of the skull over the joint. In most instances it is advisable to make a stereoscopic examination. In cases of ankylosis it is possible to determine if the trouble is in the joint or in the surrounding soft tissues. Dislocations and fractures involving the articulation can be detected.

While we know that this is a very incomplete résumé of the subject of radiology in relation to dentistry, we trust we have aroused a little interest. In addition, we hope to see a closer scientific affiliation between the dentist and radiologist in experimental research, for there is much to be learned and it is only by such co-operation that the science can satisfactorily progress.





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The Central Dental Association of Northern New Jersey.

At the January meeting of the Central Dental Association of Northern New Jersey, the essayist of the evening was Dr. Peeso, of New York City, who read a paper on "Removable Bridgework, which appears in this issue. The following discussion ensued:

Discussion of Dr. Peeso's Paper.

**Dr. Alfred R. Starr,
New York.** I do not feel competent to discuss a paper of this kind, because I do not do very much of this work, although, of course, I do some. But I endorse the fact which the speaker has brought out, and

believe that removable bridgework is very much better than any fixed bridgework, except under the circumstances mentioned, where it is used as a sort of splint; otherwise the removable bridgework is undoubtedly much the better. I am sorry that the essayist did not tell us a little more about how he managed those difficult cases where the teeth incline so much toward each other as we sometimes find between the bicuspid and a second and third molar.

Another reason I use bridgework less is because I dislike to devitalize teeth. There are many who believe that the pulp has outlived its usefulness in the case of an adult, but I do not believe that. I believe the pulp is essential for the nourishment of the tooth, and perhaps for other purposes that we are not aware of, and that it is a much more useful member of the human organism than we give it credit for. But aside from that, I dislike to devitalize a tooth because of the difficulty of filling a pulp canal. I do not claim to fill all pulp canals and fill them perfectly; that is something which I must confess I cannot do. There are many times where, after having filled a pulp canal, I may have to amputate the apex before getting a successful result. Dr. Strausburg, I



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think it was, showed me a tooth to-night, which is a very strong argument in favor of the preservation or the vitality of teeth where it is possible. There is a tooth which I think you will acknowledge to be almost an impossibility to perfectly fill. It is an upper molar, where the roots are tortuous, and necessarily the canal must be also. We meet with many cases, not perhaps as bad as that, but where it would be almost an impossibility to properly fill the canal, as it would be in that case, and that is an important reason why I dislike to devitalize teeth.

I feel very much as Dr. Star does in regard to
Dr. Chas. F. Ash, discussing this particular paper, because I have not
New York. had very much experience in using these crowns. I have, however, done a good deal of bridgework.

This kind of talk is the kind we really want, because Dr. Peeso has gone so extensively into details and technique. We frequently hear of work that is being done by men whose operations we would like to know about, but their descriptions are so very indefinite that we go away with more or less—principally more—vague ideas of how the work is constructed than we had before we came to the meeting, and we ought to be very thankful to Dr. Peeso for making his technique so plain.

I suppose if we have any exceptions to take we ought to announce them in all fairness to ourselves and to the essayist.

I do take exception to utilizing a 30-gauge band for the inner shell of a crown, because I think that a better method can be followed by utilizing a thinner metal, that is to say, I object to the irritation which may be excited by a 30-gauge band going under the gingival margin, and that is one reason why I do not use any band in making crowns for single-rooted teeth. I make a flat top. If a band is absolutely required, I only put on a shell carrying it down through the gingival margin at the lingual side and not carrying it around on the labial side, making a shoulder just at the gum margin and having the gold flush with the continuity of the root. In making the bridgework which I have been making I not infrequently make a shoulder on the tooth, carrying the surplus of the crown flush with the continuity of the root, but I think that a heavy enough platinum could be used, which will give you a very much thinner gauge and sufficient rigidity if the telescope is made accurately. If it is not made accurately, as Dr. Peeso said—well, “it either fits or it does not fit,” and if it is made accurately it fits, and if you get accuracy you get very little wear, and consequently you can use platinum of a thinner gauge than thirty, and it can be arranged so that there is almost a continuity between the metal and the face of the root.

Dr. Peeso spoke of the “contraction” of the solder where a mass of



metal is used, and also where you cast the piece, the outer shell fitting then so tightly that it has to be reamed out inside.

I would like to ask Dr. Peeso how he overcomes that in casting his piece, in making an inlay with a split pin. He spoke of fastening the tube down through the inlay and casting around it, and I wish he would tell us in closing how he overcomes shrinkage in that particular instance. And I would also like to ask him whether he is soldering on all his facings.

I first want to say that I am indebted to Dr.

Dr. Herman Chayes, Peeso for coming here and giving this technique
New York. to-night; not that I had not heard of it before, but it is more valuable to me to hear it from his own lips. If, perhaps, Dr. Peeso's method of work and his technique differ from what I use, I do not wish to be understood as being for that reason diametrically opposed to a great number of his methods.

I take issue with Dr. Peeso, not on the beautiful construction of his work, because it is beautiful, there is no question about that; not on the results he obtains with his masterful technique with innumerable details; but because of the results that I can obtain by utilizing the casting process brought out by Dr. Taggert.

If, as the essayist states, the metals undergo a change in the process of casting, it does not necessarily follow that with the proper construction of this work we cannot get as much, if not more, strength from a cast piece as we can from a soldered one. To begin with, I do not use solder at all, but use platinized gold or iridio-platinized gold for the construction of my pieces.

The time being very short, the Doctor did not go very fully into the fundamental laws of bridgework, but he stated that it is not absolutely necessary to have the abutments parallel; that a little deviation would make but little difference because of the inherent spring in the teeth. I maintain that it is absolutely necessary to have your abutments in removable bridgework parallel without the deviation even of a fraction of an inch, for the very reason that the spring you have in your teeth which you utilize would give you something which in time would give rise to trouble. That a piece lasts for fifteen or twenty years is no criterion; the irritation in the periodontal membrane may exist, and it has its effect on the terminal nerve ends and distributes that irritation to the nerve trunk and, of course, disease will follow. It is not an easy matter to absolutely parallel abutments, and viewing it from this point I would call Dr. Peeso's exposition of the facts, as he has given them rather lenient than incorrect. But I say it is rigidly essential to have abutments absolutely parallel if you are to have a perfect piece of bridgework.



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That this can be done is a fact fully well established; you can parallel abutments and have your piece go in place properly if you are willing to spend the time on it, and I know from Dr. Peeso's method of work that he is certainly a glutton for spending time on work.

In regard to the shrinkage that takes place in the hood of the crown when you cast upon it, that can be overcome very readily by taking a piece of carbon and inserting it so that only a film of investment rests between it and the carbon, which will resist all efforts of the gold to contract and the contraction you get will take place in the sprue of your casting.

Construction of Split Pin.

A point in the construction of the split pin. Unquestionably, from Dr. Peeso's methods he gets magnificent results. I have seen him at his work and have admired it. I use a seven and a half per cent. iridio-platinum wire, and the reason it sometimes breaks—not that mine breaks, but the reason that iridio-platinum wire sometimes breaks—is because we do not heat it up enough to get a thorough union. But a seven and a half per cent. iridio-platinum wire in a split pin is not a brittle thing to handle. If you will take your half-round platinum wire and bend it over upon itself, approximating the two edges, then use a draw plate with the round holes in it and pass it through the various holes, grasping it with a pair of gold pliers and pulling it through, after pulling it through two or three apertures it will give you a perfect split-pin parallel in every direction.

Any unevenness can be done away with if you have an anvil block with a half-round groove cut in it by turning it in that groove and tapping it with a hammer. The tube of the split pin is constructed by taking a piece of pure platinum tubing one gauge larger in circumference than the pin and a third smaller in length. This piece of tubing is closed at one end in the following manner: A piece of platinum plate 33 gauge is covered with a cylinder of gold foil completely flattened against the platinum. The piece of tubing is firmly forced down upon the gold foil. The three are now grasped in a pair of pliers and the blow-pipe is played upon them until the foil fuses, firmly uniting the platinum tube to the platinum plate. The surface is cut away from the piece of platinum plate and the rough margin filed off up to the tubing. A stub steel post of the same diameter to correspond with the diameter of the split pin is now placed inside of the platinum tubing, and the platinum tubing carrying the stub steel wire is now forced, closed end first, through the draw-plate, and this is continued until the tubing has been reduced in diameter and circumference so that it will snugly fit the stub steel post, which is of the same diameter as the split pin.



Some difficulty will be experienced in removing this closely fitting tube from the stub steel post, and the simplest manner in which to accomplish this is by placing the wire carrying tube upon a glass slab and rolling it briskly under a finely cut flat file. This procedure will in a few moments enable us to gradually remove the tube from the wire by turning the tube upon its diameter and exercising a pull upon it at the same time. We shall then have a perfect piston in the shape of the split pin and a perfect cylinder to fit this perfect piston in the shape of a platinum tube.

There are a few points I would like Dr. Peeso to touch on, if he will, when he closes the discussion.

Resistance to Stress. In the construction of bridges for commercial purposes over highways or streams they must be so built as to carry a certain weight, that is, they must have a certain prescribed strength to resist prescribed strains. So in the human mouth, the bridge must be constructed to carry a certain stress and pressure, and positive laws must be laid down in the construction of bridgework in the human mouth, even more so than in the construction of bridges for commerce. I take it, no abutment is meant to do anything more than to prevent a bridge from slipping up and down, particularly a removable bridge. If it is a large bridge, the gum is there, and then the alveolar structure may carry the entire strain during the process of mastication. If any of the strain is transmitted to the abutments it means the loss of the abutments in time. I maintain that we have no right to make any tooth or root in the mouth do any other work in the process of mastication than that for which Nature intended it. To be explicit let me say this: You have six anterior or cutting teeth; these teeth were meant for incising and prehension. You have the bicuspids and molars, and they have their use. If you put a piece of work in the mouth and force it on a cuspid or a central or molar, and you do not make the alveolar process support the stress, then you will transmit incorrect stresses to the teeth, which in time will cause trouble with the periodental membrane.

A test of ten years is no test when you consider that it has taken millions of years for the evolution of the human body. So, although that piece of work looks very pretty and although it stands well for a time, that is no proof that there has been no pathological offense instituted.

I would like Dr. Peeso to tell me just how he attaches his saddle to his abutments.

The way I do it is as follows: When I get the saddle into position, ready to take my impression, with the abutment in place, I take my



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impression of the saddle and abutment in a position of extreme stress; in other words, I force that saddle up so hard that it cannot be forced up any further. Then I take my impression of the saddle and one abutment in this given relative position, and when I have joined them together go to the next abutment and do the same thing. In this way when I put my bridge into place the gum asserts itself and forces the bridge, so to speak, a fraction of a millimeter off the abutment and when the teeth come down on it during the stress of mastication there is an inherent elasticity in the gum which takes up the greater part of the strain.

Dr. Peeso.

I never carry a bicuspid crown to a cuspid.

But you do construct a piece of work using the

Dr. Chayes.

cuspid and molar for abutments and swinging the missing teeth upon these two. You must realize then that in using the dummies of the molar abutment during the process of mastication you convey to the cuspid a stress for which it was not originally intended. A cuspid is a prehensile organ used during the process of mastication. A molar and bicuspid are triturating organs used in the process of mastication. The prehensile stress a cuspid usually is subjected to is very different in its effects from the triturating stress the bicuspid and molar have to submit to. This can be readily seen in the difference of formation and distribution of the roots of the teeth mentioned. It therefore becomes necessary to so construct our work that in a piece of work of this kind the stress must be broken at a point where it begins to vary in kind, and hence in effect; to wit, in the piece of work cited the stress should be broken at the distal point of the cuspid abutment, and this means that the joint between cuspid and saddle must be adjustable and movable to a degree in proportion with the possibility of displacement of the tissue beneath the saddle during the process of mastication.

I do not want to take up time, but I want to thank Dr. Peeso very much for showing me his detailed technique in soldering. I have never seen him do it, although I have seen the work and admired it greatly. But I believe if Dr. Peeso would take as much trouble in the casting work as he does in this he will realize that he can get just as good results.

I was very much interested in seeing this ex-

Dr. Baxter.

hibition and hearing the blackboard talk. I had read Dr. Peeso's writings in the magazines, but got more out of it to-night than I ever did before.

I am reminded of something that happened when I was running a laboratory and had a number of students taking a course. One of them



ITEMS OF INTEREST

was a particularly conscientious young fellow who came to me one day after I had given him a plate to work on and said, "What am I going to do with this?" I told him what to do, and he said, "Prof. Lydick told me never to do that; that is not right." I said to him, "Prof. Lydick told you exactly right; you never should do it; but this is the time you have got to do it." So it seems to me in this talk we are having about bridgework and getting the abutments absolutely parallel, all that is good theory, and if you can do it, do it, but there are times when we must do something else; you want results and I find that you can get results. I showed the essayist a piece of work in my own mouth that I told him I would never have the courage to put in anyone's else mouth, but I have had it there for fifteen years and it has done good service; if I should lose it now I should consider I had been paid for putting it there. Whether the pathological results have been detrimental or not I do not know; they have not shown in fifteen years.

As far as removable bridgework is concerned I must say that personally I have done very little of it, but if I have a patient with abutments that I cannot parallel, if I can insert a fixed bridge that will give good service for fifteen years, I consider that I have done him good service, and it has been better for him than to go with a vacancy or wear a plate for that length of time. I know from experience what it is to wear plates, for I wore them for a number of years and then put in bridges, and I have had so much satisfaction out of bridges that if I should lose them now I should feel that I was not a loser, because for all those years I have had the use of them.

May I say just another word in reference to

Dr. Ash. something Dr. Baxter has just said?

I rather regret a little that Dr. Baxter has spoken perhaps somewhat lightly of the discussion Dr. Chayes made.

Dr. Baxter. I beg your pardon, I did not mean my comments in that light at all.

I am not going into personal matters to defend

Dr. Ash. Dr. Chayes, only to say that I believe men who are doing the best kind of work, and I believe Dr. Baxter

is one of them, should try to impress upon men who are not very adept in this work, and who are rather trying to learn it, the necessity for absolute accuracy. Do not let anybody go away with the idea that he may do something which should not be done if it can be avoided. There is too much of that in all the different branches of technique in dentistry; there is too much of it in connection with the filling of roots and putting in fillings and doing bridgework. We ought to do the very best that can



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be done, and if there is one little bit of a point that one fellow can show us which is a little better than the average that we are all doing, let that point be brought out and emphasized.

The automobile fourteen or fifteen years ago was a very crude proposition, and if there had not been as much money to be made in it as there has been it would have remained crude; but now they are up-to-date, and every little detail has been developed for all it is worth, and everybody is trying to give the public a better thing than the other fellow did, and if we do that every day with our work we will be doing a better class of work at the end of the year than we did when we began. While we can put in any mouth a bridge that will last from six to seven years we ought not to be satisfied with that. I remember when I first joined the Second District Dental Society, Dr. Emory Bryant, of Washington, was the essayist, and what he said made such an impression on me that I have never forgotten it. In closing the discussion he said that any piece of bridgework that lasted ten years was a good piece of bridgework, and I take off my hat to Emory Bryant for being a good man for making good work. But he said the life of all bridgework would not be ten years. That might be with the kind of bridgework we were making fifteen or eighteen years ago, but we now know of better ways of making the crown than we did then, and for doing lots of things in connection with bridgework, and we have better ways of doing them, and if any of us have a little point of any kind that we think will help, let us receive it with gratitude.

Dr. Chayes.

I want to say to you, Dr. Baxter, that I can parallel any two or three or any number of abutments in the mouth if they are fit to be used for a bridge, and that I can use these abutments without subjecting them to any stress outside of that to which Nature intended them to be subjected, plus the fractional relation in a vertical direction between them and the appliance.

Dr. Peeso.

Way back in 1890, at the old Academy of Stomatology in Philadelphia, I read a paper on crown and bridgework. I was much younger in the profession then, but still I had done quite a little bridgework. At that time the bridges that were made were of the self-cleansing type. After reading my paper I exhibited a patient for whom I had done a large amount of work. In bridges and crowns there had been seventeen or eighteen teeth restored. Dr. Bonwill, whom many of you remember, was one of the men who discussed my paper and examined the work. He spoke very highly of the work, saying it was beautiful and all that, and then he commenced to tear me to pieces. He said that the work would not last,



as the principles were altogether wrong. You probably remember how Dr. Bonwill could talk, and he ripped me up the back and down the front. That work which I showed up in 1890, with the exception of one bridge and a single crown, is in the mouth today and doing good work, notwithstanding the fact that Dr. Bonwill had maintained that it was not practical.

I do not agree with Dr. Chayes when he says that it is always necessary to get support for the bridge by resting the abutments on the gum, although there are times where such additional support is necessary, especially when the missing teeth have been out for a long time.

Properly treated, a tooth will do far more work than it was originally intended to do. Theoretically this may be wrong, but practically it does it and has done it for a great many years.

In regard to saddles as supports, especially in extension saddle bridges, from the time I began using them, which is nearly twenty years ago, I always considered the relation of the saddles and the abutments, and this relation must be gotten with the saddle under pressure.

In regard to the parallelism of the abutments, I stated that there was a slight natural spring to the teeth which could be taken advantage of and which would not injure the teeth in the slightest degree. I am perhaps a young practitioner; my experience goes back but twenty-five years, which is, after all, a very short time. I have work that has been in the mouth all that time and is giving good service to-day. I do not think that there is anyone who gets the abutments more nearly parallel than I do, and I agree with Dr. Chayes that there is no mouth where the abutments cannot be made perfectly parallel. But I also say there may be a slight deviation from strict parallelism, but it must be very slight, no more than to allow the natural spring of the teeth. This can be taken advantage of without harm to the tooth itself.

In regard to the question that Dr. Ash asks, concerning the casting around the tube, I thought that I made it quite clear when I spoke of this neck-like constriction in the tube in the soldering it in the floor. This constriction is removed by opening it with a finishing burr until the mandrel over which the tube was made will enter freely.

It is very rarely at the present time that we use facings in bridge-work. We are using mostly crowns of the different types with cast or swaged bases. In regard to the thickness of the band which Dr. Ash spoke of, I consider that it should be of at least 30-gauge in thickness, if the tooth has been trimmed as it should be trimmed. Even if the band were made of 28-gauge, if the teeth were properly trimmed and the band properly fitted it would not do more than restore the contour which has been removed. We all understand that when the band is put in place



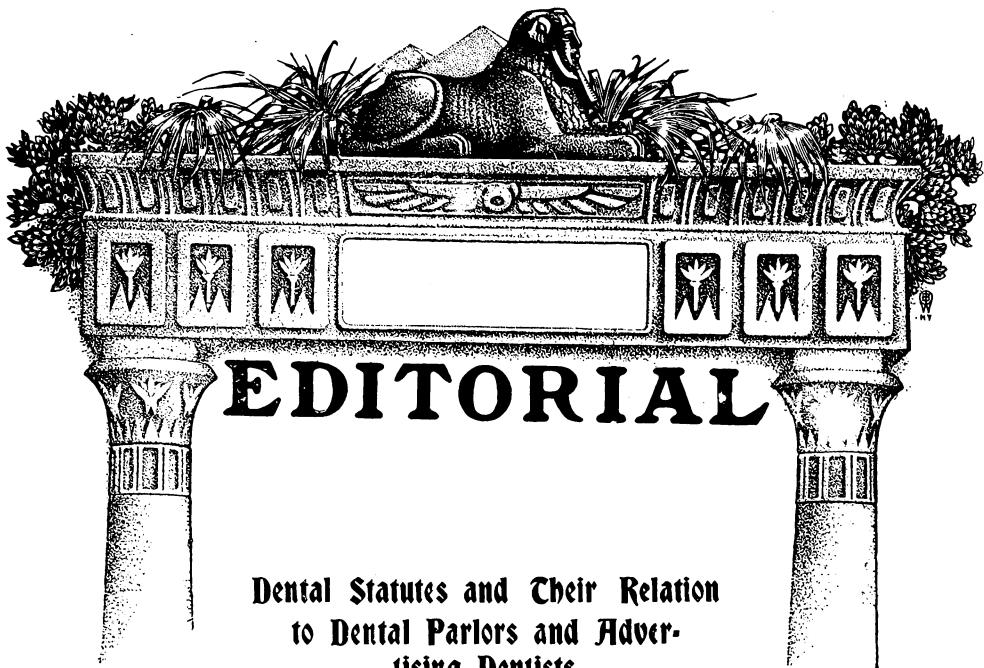
SOCIETY DISCUSSIONS

the gingival end should be brought to a very thin edge, and if this is done and the band properly fitted to a properly trimmed root there will be no irritation.

In this connection I will say that in the patient of whom I spoke as having been exhibited at the Academy, in 1890, the roots were all banded far up under the gum, so that they could not show. Dr. Darby in looking at it said, "I see you have not banded the roots," but the gum was forced up on the labial side and showed that they had been banded. Of course, as a person grows older there is a perfectly normal recession of the gum tissues, but in the work done for that patient, at the present time, there are very few of these bands showing. But unless the tooth is properly trimmed it should not be banded at all.

In regard to the drawing of the pin, as Dr. Chayes described, that is all right, but the pin must be perfectly straight, and I have never yet seen a wire or a tube which was put through a draw-plate which was perfectly straight. In a drawn tube, even of one-half an inch in length, there is enough variation so that it will be necessary to force a perfectly straight mandrel through in order to straighten it out. A pin which is drawn is not straight, and it must be straightened on the anvil, or in some other manner, and afterwards finished with a fine file and burnisher.





At the recent annual meeting of the New York State Dental Society two significant pieces of news were announced. First: the Law Committee reported that the bill for a new dental statute which has been pending during the winter before the New York State Legislature had failed to pass. Second: word came that the Michigan law (published in the January issue of this magazine) had passed and had been signed by the Governor.

During the last days of the New York meeting an anonymous statement, fathered by nobody, but industriously and persistently circulated by "someone" and "someone's close friends," was so frequently repeated that in a short time no one could be found who had not heard "the news from Michigan." But upon questioning it was found that the "news from Michigan" did not relate so much to the good features of the bill as to the fact that "that Michigan bill that Ottolengui advocates so heartily was passed with a rider that legalizes dental parlors in the State forever."

An erroneous statement which is builded upon a modicum of truth is always a dangerous sort of rumor, and to this class belongs the report



that Michigan has legalized dental parlors forever. Moreover, there was a certain comic opera element about this rumor to the effect that the quacks of Michigan had succeeded in modifying the Michigan bill, since it was traveling cheek by jowl with the admission that the quacks of New York had *killed* the New York bill. This killing, by the way, would not rise to the dignity of a place in comic opera, but would be relegated to the flap-stick methods of farce. The New York bill had passed first the Senate and then the Assembly, but amendments in the Assembly caused it to be necessary to return it to the Senate for concurrence, and in transit from one house to the other it became "lost, strayed or stolen," as the lost-dog advertisement have it. Just what did happen deponent saith not, because he knoweth not, beyond the fact that it left the Assembly and never reached the august Senate (or the April Senate, whichever it was). And that bill had some good features, but it also had a provision that a dentist must practice in his own name, and it was a similar clause in the Michigan law which brought about similar resistance in both States. In New York those interested in operating dental parlors under "trade names" engaged as counsel a lawyer who has served in the legislature, and who consequently may be supposed to know something of legislative methods. In Michigan the same class of men had an attorney who is a brother of a State Senator.

**What Really
Happened in
Michigan.**

Rumors aside, let us dispassionately discuss what actually occurred in Michigan. At a public hearing the dental parlor men were represented by able counsel, who made it clear that their trade names had considerable value, and that the passage of the proposed bill would destroy that value. They also argued that in case of death of the proprietor of an advertising office the proposed law would compel a change of name, thus destroying the name under which the practice had been established. As this is always the argument used, the dental profession must find adequate answer before legislatures can be persuaded to adopt the so-called ethical view.

The writer was present at one meeting called in New York City for the purpose of organizing an opposition to the New York bill, and at that meeting he met a man who is not a dentist, but who owns and operates four dental parlors. This man said, "If you pass that new bill I will have



to go out of business," and the reply was, "No man should be practicing dentistry or receiving the fees which patients pay for dental service who is not himself a dentist, and therefore competent to judge of the service rendered by his assistants." The argument was then shifted to a new point of view: "Suppose," said the dental parlor owner, "that a legally licensed dentist should die, how is his widow to continue the business?" And the answer was: "Your question indicates your entirely wrong point of view. Dentistry should not be looked upon as a business, and some day the public will realize the danger to the community of permitting the conduct of dentistry in that manner. If a minister should die, does his widow attempt to continue the preaching in his church with preachers of her own hiring? If a lawyer dies, does his widow feel entitled to use his name and conduct a law business? If a physician dies does his widow expect his patients to let her hired men treat them and pay her the fees? But what is closest yet to the dental situation would be the question, Can the widow of a surgeon continue her dead husband's surgical work?"

To bring this truth home to the people, that it is a menace to public health to permit dentistry to be conducted as a business, rather than as a profession, will require considerable education, and in the meanwhile the dental parlor must be tolerated. At the same time it becomes more than ever essential that these parlors should be held strictly accountable to such law as will protect the patients attracted by their advertisements. Therefore the Michigan law, in spite of the "rider," is a long step in advance. This will be seen if the amendments are carefully read and considered.

AMENDMENT TO HOUSE BILL No. 283 (FILE No. 208).

Amendments to Michigan Law.

Section I, line 6, after the word "provided" insert the following: "except, that the use of any name or names used by any proprietor, manager or other person operating any dental parlor, office or rooms at the time this act becomes operative, including the firm name, assumed name or corporate name of any dental parlor, office or rooms used for dental purposes that are operating at the time this act shall take effect, shall not be prohibited to the present owners, their heirs, or assigns; but no such proprietor, manager or other person or their heirs or assigns operating any such dental offices, parlors, or rooms, shall be permitted to open any office under such assumed or corporate name in any city other than



the one in which he may maintain such office at the time this act shall take effect."

Section I, line 11, change the period to a comma and insert the words, "except as herein above provided."

Section I, line 18, change the period to a comma and insert the words, "except as herein above provided."

Insert, page 13 after line 46:

"Every person, persons or corporation who is the proprietor of or controls any dental office or parlors doing business in this State shall promptly report to the State Board of Dental Examiners the name or names of all registered dentists in his employ, together with their place of residence, and when said registered dentists shall leave the employ of said person, persons or corporations aforesaid, said facts shall be promptly reported to the State Board of Dental Examiners."

**Good Features
of the
Michigan Law.**

Thus while those at present operating under trade or firm names are permitted to continue, they may not open branches in other cities, nor may any new dental firms start in business. But while these existing dental firms are permitted to continue, they are compelled to report the names of all licensed men in their employ, as well as when these men leave their employment. These men, in common with all other dentists in the State, must comply with the rest of the law, which provides:

First, that a practitioner must have a license. Second, that he must register annually. Third, that a dental license may be revoked for several reasons, one of which is unprofessional conduct, and one part of the definition of unprofessional conduct reads as follows: "The advertisement of dental business or treatment or devices in which untruthful, improper or impossible statements are made, etc."

A man accused of unprofessional conduct is tried by the Board, and, as the law is worded, the decision of the Board in revoking a license is final, and it therefore may determine what is or is not improper advertising. Thus while the law does not, as it probably could not, prohibit advertising, it does protect the public by insisting that the advertising shall be conducted in a moral manner. Perhaps it has not yet dawned upon the profession in Michigan, as it certainly had not dawned upon the "rumorists" in Albany, but it seems to be a fact that the new Michigan law creates a censorship over dental advertising and vests this power in



the Board. Therefore, if the Board chooses, it may begin at once collecting all dental advertisements and notifying those that promise improper or impossible inducements that they must discontinue or have their licenses revoked.

The "rumorists" at Albany made another oversight when they said that the Michigan law legalizes dental parlors forever. In the first place no law last forever. Those back of the bill were wise to accept the rider rather than lose the whole bill (or risk its evaporation in transit from one branch of the legislature to the other). As the situation now is, all the best features of the bill have been enacted into law. In a year or two if the dental firms do not conduct their parlors so as to meet the requirements of employing only licensed men, and of advertising only what they can deliver, then a new bill can be introduced into the legislature aimed wholly at the dental parlor offenders, and in the meantime a campaign of education may so alter the temper of the people that the bill would pass.

**Legal Control
of Dental
Parlors.**

The New York State Society has appointed a committee to draft a new law for the Empire State. If this committee does its duty it will take a lesson from the experience in this last legislature, and will not include any clause in the bill which would give

the advertising men any standing in court. However desirable it might be to bring the conduct of dental practice within the strict limitations of a profession, we should recognize that too much cannot be accomplished at once. Permit dental parlors, since we must, but compel annual registration and the employment only of licensed men. Permit advertising since apparently we cannot stop it, but have the advertising censored and kept within the bounds of truthfulness. With such a bill before the legislature, could the dental parlor men and the dental advertisers employ eminent counsel to go before a Legislative Committee and cry: "My clients oppose this bill; they wish the right to hire unlicensed men and they wish the right to make impossible promises in their advertisements"?



SOCIETY ANNOUNCEMENTS

National Society Meetings.

NATIONAL DENTAL ASSOCIATION, Kansas City,
Mo., July 8, 9, 10, 11, 1913

AMERICAN SOCIETY OF ORTHODONTISTS, Chicago,
Ill., June 30, July 1, 2, 1913.

INSTITUTE OF DENTAL PEDAGOGICS, Buffalo,
N. Y., January, 1914.

State Society Meetings.

ARIZONA DENTAL SOCIETY, Phoenix, Ariz., November, 1913.

Secretary, Dr. H. H. Wilson, Phoenix, Ariz.

CALIFORNIA STATE DENTAL ASSOCIATION, Oakland, Cal., June 2, 3, 4, 5,
1913. Secretary, Dr. E. E. Evans, Oakland, Cal.

COLORADO STATE DENTAL ASSOCIATION, Manitou, Colo., June 19, 20, 21,
1913. Secretary, Dr. A. W. Starbuck, 1340 Arapahoe St., Denver,
Colo.

DISTRICT OF COLUMBIA DENTAL SOCIETY, Washington, D. C., June 12, 13,
14, 1913. Secretary, Dr. F. F. Drew, Baltimore, Md.

FLORIDA STATE DENTAL SOCIETY, Atlantic Beach, Fla.,
Secretary Dr. Jesse L. Williams, Jacksonville, Fla.

GEORGIA STATE DENTAL SOCIETY, Columbus, Ga., June 12, 13, 14, 1913.
Secretary, Dr. DeLoss L. Hill, Grant Bldg., Atlanta, Ga.

MAINE DENTAL SOCIETY, Portland Harbor, Me., June 25, 26, 27, 1913.
Secretary, Dr. I. E. Pendleton, Lewiston, Me.

MARYLAND STATE DENTAL ASSOCIATION, Washington, D. C., June 12, 13,
14, 1913. Secretary, Dr. F. F. Drew, 701 N. Howard Street, Balti-
more, Md.

MINNESOTA STATE DENTAL ASSOCIATION, Minneapolis, Minn., June 13,
14, 1913. Secretary, Dr. Benjamin Sandy, Syndicate Bldg., Minne-
apolis, Minn.

MISSISSIPPI DENTAL ASSOCIATION, Meridian, Miss., June 24, 25, 26,
1913. Secretary, Dr. L. B. Price, Corinth, Miss.



ITEMS OF INTEREST

MISSOURI STATE DENTAL ASSOCIATION, Kansas City, Mo., July, 1913.
Secretary, Dr. S. C. A. Rubey, Warrensburg, Mo.

MONTANA STATE DENTAL SOCIETY, Butte, Mont., June 13, 14, 1913.
Secretary, Dr. T. T. Rider, 9 Higgins Block, Missoula, Mont.

NEW HAMPSHIRE DENTAL SOCIETY, Weirs, N. H., June 18, 19, 20, 1913.
Secretary, Dr. F. F. Fisher, Manchester, N. H.

NEW JERSEY STATE DENTAL SOCIETY, Asbury Park, N. J., July 16, 17, 18, 1913. Secretary, Dr. A. W. Harlan, 47 Crescent Ave., Jersey City, N. J.

OHIO STATE DENTAL SOCIETY, Toledo, O., December 2, 3, 4, 1913.
Secretary, Dr. F. S. Chapman, Schultz Bldg., Columbus, O.

PENNSYLVANIA STATE DENTAL SOCIETY, Philadelphia, Pa., June 24, 25, 26, 1913. Secretary, Dr. L. M. Weaver, 7103 Woodland Ave., Philadelphia, Pa.

SOUTH CAROLINA STATE DENTAL ASSOCIATION, The Isle of Palms, June 25, 26, 27, 1913. Secretary, W. Busey Simmons, Piedmont, S. C.

TENNESSEE STATE DENTAL ASSOCIATION, Nashville, Tenn., June 5, 6, 7, 1913. Secretary, Dr. C. O. Rhea, Nashville, Tenn.

UTAH STATE DENTAL SOCIETY, Salt Lake City, Utah, June 23, 24, 1913.
Secretary, Dr. W. G. Dalrymple, 2421 Washington Avenue, Ogden, Utah.

VIRGINIA STATE DENTAL SOCIETY, Old Point Comfort, Va., July 22, 23, 24, 1913. Secretary, Dr. C. B. Gifford, Taylor Bldg., Norfolk, Va.

WEST VIRGINIA STATE DENTAL SOCIETY, Parkersburg, W. Va., August 13, 14, 15, 1913. Secretary, Dr. Frank L. Right, Wheeling, W. Va.

WISCONSIN STATE DENTAL SOCIETY, Madison, Wis., July 22, 23, 24, 1913.
Secretary, Dr. O. G. Krause, Wells Bldg., Milwaukee, Wis.

National Dental Association.

The 1913 session of the National Dental Association will be held in Kansas City, Mo., July 8th to 11th. The reorganization of the association should make this the most important meeting in its history. Every State society that has met since the new constitution and by-laws was adopted, at the Washington meeting, has voted to become a constituent society, and we can all appreciate the influence of such an organization if all the State societies take similar action.

The officers and committees have been active in preparing an exceptionally interesting program. At this date the following literary program is tentatively announced:



SOCIETY ANNOUNCEMENTS

Dr. Frank O. Hetrick, Ottawa, Kan., "President's Address."

Dr. Adolph Fenchel, Hamburg, Germany, subject to be announced later.

Dr. Weston A. Price, Cleveland, O., "Scientific Foundation Fund."

Dr. Roscoe A. Day, San Francisco, Cal., "Orthodontia and its Relation to Dentistry."

Dr. Marcus L. Ward, Ann Arbor, Mich., "Metallurgy."

Dr. Richard L. Simpson, Richmond, Va., "Unbanded vs. Banded Crowns."

Dr. Percy H. Howe, Boston, Mass., "The Saliva."

Dr. Arthur D. Black, Chicago, Ill., "Something of the Etiology and Early Pathology of Diseases of the Peridental Membrane, with Suggestions as to Treatment."

Dr. Hermann Prinz, Philadelphia, Pa., "A Preliminary Report on Action of As_2O_3 ."

Dr. Howard R. Raper, Indianapolis, Ind., "The Value of the Radiograph in the Practice of Modern Dentistry."

Dr. G. S. Junkerman, Cincinnati, O., "Dental Educational Harmony."

Dr. Clarence J. Grieves, Baltimore, Md., "Periapical Infections."

Dr. J. J. Sarrazin, New Orleans, La., "Prophylaxis."

Dr. H. B. Tileston, Louisville, Ky., "Diagnosis and Treatment of Diseases of the Dental Pulp."

The clinic committee has been very energetic in preparing their program and we have every reason to expect that they will present a very strong list of clinicians. The local committee of arrangements are providing ample facilities for a large meeting and have selected the Baltimore Hotel as headquarters. Those desiring to make hotel reservations in advance should address the Baltimore Hotel, or the chairman of the local committee of arrangements, Dr. Charles C. Allen, 507 Rialto Building, Kansas City, Mo. Information regarding transportation from any point may be secured from any local railroad agent, as they have full information with reference to all rates granted by various passenger associations in their particular territory.

All reputable practitioners of dentistry and medicine are cordially invited to attend this meeting.

FRANK O. HETRICK, President,
Ottawa, Kan.

HOMER C. BROWN, Rec. Sec'y,
185 East State St., Columbus, O.



Kansas City Hotel Information.

HOTEL BALTIMORE (HEADQUARTERS)

One person—without bath.....	\$1.50	and	\$3.00	per day
One person—with bath.....	2.50	"	6.00	" "
Two persons—without bath.....	2.50	"	3.00	" "
Two persons—with bath.....	4.00	"	7.00	" "

SEXTON HOTEL

One person—without bath.....	\$1.00	per day and up
One person—with bath.....	2.00	" "

THE COATS HOUSE

One person—without bath.....	\$1.00	to	\$2.00	per day
One person—with bath.....	1.50	"	3.50	" "

HOTEL SAVOY

One person—without bath.....	\$1.00	to	\$1.50	per day
One person—with bath.....	1.50	"	2.50	" "

HOTEL VICTORIA

Single—without bath.....	\$1.00	and	\$1.25	per day
Double—without bath.....	1.50	"	2.00	" "
Single—with bath.....	1.25	"	1.50	" "
Double—with bath.....	2.00	"	2.50	" "

HOTEL KUPPER

Single—without bath.....	\$1.00	and	\$1.50	per day
Double—without bath.....	2.00	"	2.50	" "
Single—with bath.....	1.50	"	2.50	" "
Double—with bath.....	2.50	"	4.00	" "

DENSMORE HOTEL

Single—without bath.....	\$1.00	per day
Double—without bath.....	1.50	" "
Single—with bath.....	1.50	" "
Double—with bath.....	2.00	to \$2.50 per day

HOTEL EDWARD

Rates \$1.00 per day and up



HOTEL WHITE

Rooms—running water—hot and cold.....	\$1.00	per day
“ —shower or tub bath.....	1.50	“ “
“ —outside—bath with tub.....	2.00	“ “

The above hotel information was received after our general notice was sent to the journals. Would suggest that persons interested make reservation direct with the hotel of their selection.

HOMER C. BROWN, Recording Secretary.

Railroad Arrangements for the National Meeting.

**Delta Sigma
Delta
Special Train
from New York.**

The annual meeting of the Delta Sigma Delta will be held in Kansas City, Mo., Monday, July 7th, being one day prior to the opening meeting of the National Dental Association. The banquet will be held the same evening.

The New York Auxiliary has completed arrangements with the New York Central Lines for a special train to leave the New York Central terminal at 4.02 P.M. Saturday, July 5th, arriving Kansas City via Burlington route at 8.30 A.M. Monday, July 7th (see announcement of Chicago train, below). The special train will be made up of the latest type steel Pullman cars, electric lighted throughout and will be operated through to Kansas City on a fast schedule. Brothers in Boston and New England may connect with this train by leaving Boston 2.00 P.M. via the Boston & Albany road, making an immediate connection at Albany at 7.55 P.M. It is suggested that the New England delegation travel in parlor cars to Albany, at which point a convenient transfer may be made to the special train. Reservations on the special may be made by addressing Dr. Ottolengui prior to June 30th.

The cost of railroad transportation on the special train from New York will be \$34.75. Pullman car charges will be \$7.50 for lower berth; \$6.00 for upper berth; \$13.50 for section and \$27.00 for drawing room.

The cost of railroad transportation from Boston will be \$32.75. Pullman car charges will be \$8.00 for lower berth; \$6.40 for upper; \$14.40 for section and \$28.00 for drawing room. Application for Pullman accommodations should be sent to Dr. R. Ottolengui, 80 West 40th Street, New York City.



Time Table and Fares

Lv. New York (Saturday).....	4.02 P.M.	\$34.75
Ar. Albany	7.48 P.M.
Lv. Boston	2.00 P.M.	32.75
Ar. Albany	7.45 P.M.
Lv. Troy (Belt Line).....	7.00 P.M.	28.80
Lv. Albany	7.55 P.M.	28.80
Lv. Schenectady	8.27 P.M.	28.27
Lv. Utica	10.04 P.M.	25.71
Lv. Syracuse	11.30 P.M.	25.65
Lv. Rochester (Sunday).....	1.25 A.M.	24.03
Lv. Buffalo	3.30 A.M.	22.65
Lv. Detroit	8.25 A.M.	15.70
Ar. Chicago	3.30 P.M.
Lv. Chicago (Union Depot).....	6.10 P.M.
Ar. Kansas City (Monday).....	8.30 A.M.

**National Dental
Association
Special Train.**

Members of the National Dental Association are cordially invited to join the Delta Sigma Delta special train for their journey to the Kansas City convention. This train being exclusively for members of the dental profession, will offer exceptional opportunity for fraternizing during the journey.

All Pullman reservations will be made in the order in which they are received and if you are unable to definitely decide before June 30th, address W. V. Lifsey, general Eastern passenger agent, New York Central Lines, 1216 Broadway, New York City.

**Train Via
Wabash
Railroad.**

For the convenience of those who may prefer a different route, the following announcement is made: Persons starting from New York may travel over the Wabash road, leaving New York City and New Jersey points either by the D. L. & W., or the West Shore road, as follows:

Rates

Via D. L. & W. or West Shore and Wabash: From New York (party of ten or more), \$25.60. Individual fare, \$27.75.

Via Wabash Railroad: From Buffalo (party of ten or more), \$18.60. Individual fare, \$21.15.



Service

Via D. L. & W. and Wabash: Leave New York, 10.00 A.M., D. L. & W. Railroad.

Leave Buffalo, 8.25 P.M., Wabash Railroad.

Arrive Kansas City, 9.30 P.M., Wabash Railroad.

Via West Shore and Wabash Railroad:

Lv. New York.....	2.15 P.M.	West Shore
Lv. Buffalo	1.50 A.M.	Wabash
Ar. St. Louis.....	9.32 P.M.	"
Lv. St. Louis.....	11.31 P.M.	"
Ar. Kansas City.....	7.46 A.M.	"

Reservations in the above-mentioned trains can be obtained from Mr. A. S. Dunbar, general agent, passenger department, Wabash Railroad, 387 Broadway, New York.

V. H. JACKSON, Executive Committee.

**Delta Sigma
Delta Trains
from Chicago.** The Delta Sigma Delta special will leave the Union Depot (Canal and Adams streets), at 6.10 P.M., Sunday, July 6th, and arrive Kansas City at

8.30 the next morning.

It will be a splendid and handsome train and carry the most modern equipment, including dynamo baggage car, buffet-club car, standard drawing room and compartment sleeping cars, Burlington colonial dining car and one of those thoroughly comfortable lounge cars (containing club room for men, library alcove, social parlor for both ladies and gentlemen and an enclosed observation platform). The train will be electric lighted, block protected, provided with electric fans and operated by a picked crew of "Burlington" men.

The round trip railroad fare from Chicago to Kansas City and return will be \$21.50. Proportionate fares will be in effect from other points. Tickets will carry a final return limit of sixty days from date of sale.

The charge for Pullman accommodations will be as follows:

Lower berth	\$2.50
Upper berth	2.00
Section	4.50
Compartment	6.00
Drawing room	9.00

Berth reservations will be made upon application by the transportation committee and it is requested that early application be made in order that the committee may be in position to place orders for sufficient equipment to insure ample room for all.



Xi Psi Phi Headquarters National Dental Association.

Headquarters for the members of the Xi Psi Phi Fraternity will be established at the Baltimore Hotel, Kansas City, Mo.

Special accommodations have been made for train service from Chicago and all members of the fraternity east of Chicago are invited to avail themselves of this service. For further information address,

C. C. MARKEY, D.D.S., Secretary.

1740 Greenleaf Ave., Chicago, Ill.

International Dental Congress, 1914.

The Sixth International Dental Congress will be held in London from August 3 to 8, 1914, at the invitation of the British Dental Association.

His Majesty King George V has graciously consented to be the patrons of the Congress, which will take place at the University of London and at the Imperial College of Science and Technology, South Kensington.

The president of the congress will be Mr. J. Howard Mummery, and the joint general secretaries are Mr. Norman G. Bennett and Mr. H. R. F. Brooks. Mr. H. Baldwin is honorary treasurer.

A committee of organization, under the presidency of Mr. W. B. Paterson (president of the International Dental Federation), with Mr. F. J. Pearce as honorary secretary, has been busily engaged for some time in making the preliminary arrangements.

Previous congresses have taken place in Paris, 1889; Chicago, 1893; Paris, 1900; St. Louis, 1904; and on the last occasion at Berlin, in the Reichstag, in 1909, when the German Emperor took a personal interest in the meeting, delegates attended from twenty different countries, and the Governments of many of them were officially represented.

Invitations are being issued to dental organizations throughout the world, and it is hoped thus to secure the co-operation of leading specialists and representative authorities in all branches of dental surgery.

The rules of the International Dental Congress provide that all ethical practitioners of dentistry possessing the qualification of the country in which they received their professional education, or of the country in which they practice, are eligible for membership.

The subscription for members of the congress will be 30s. (38 francs; 31 marks; 7½ dollars), and for members of their families accompanying them 15s. (19 francs; 15½ marks; 3¾ dollars).

The offices of the congress are:

19 Hanover Square,

London, W.,

to which address all communications should be sent.



Pacific Coast Orthodontists Organize.

Following the three days' invitation clinic recently held in Los Angeles by Dr. Edward H. Angle for the benefit of the graduates of his school now practicing on the Pacific Coast, there was organized an association to be known as the Pacific Coast Society of Graduates of the Angle School of Orthodontia. The objects of this society are:

1st. The promotion of knowledge in all that pertains to orthodontia, and the advancement and establishment of the science as a distinct specialty.

2d. Fraternal and professional association of orthodontists, and especially of graduates of the Angle School of Orthodontia.

3d. Mutual, cordial and helpful relation with the Alumni Society of the Angle School of Orthodontia and other societies composed of Angle men.

The following who were in attendance constitute the charter membership: Dr. Wm. Bolton, Seattle; Dr. Wellslake Morse, Los Angeles; Dr. John R. McCoy, Los Angeles; Dr. W. A. Smith, Wallace, Idaho; Dr. James D. McCoy, Los Angeles; Dr. Wm. E. Wilson, San Diego; Dr. Robt. Dunn, San Francisco; Dr. Genette Harbour, Los Angeles; Dr. Wm. C. Smith, Pasadena.

At the initial meeting officers were elected for the ensuing year, as follows: Dr. Robt. Dunn, San Francisco, president; Dr. John R. McCoy, Los Angeles, secretary-treasurer.

The next annual meeting will be held in San Francisco during February, 1914.

West Virginia State Dental Society.

The seventh annual meeting of the West Virginia State Dental Society will be held in the assembly room of the Chancellor Hotel, Parkersburg, W. Va., August 13, 14 and 15, 1913. Opening session at two o'clock, Wednesday, August 13th.

Our *new program committee* have all thrown their *hats in the ring*, and they promise the *best program* ever presented to our society.

The Executive Council have directed me to urge *every member* to be present, and if possible bring a *new member* with you. Mark off (from your appointment book), these days of meeting. You will learn *something* there, and *we need you*. The place of meeting, the Chancellor Hotel, Parkersburg, the dates, August 13th, 14th and 15th.

Come, you will find the time well spent, the money (for the trip) well invested.

FRANK L. WRIGHT, Secretary.

Wheeling, W. Va.



Florida State Board of Dental Examiners.

The Florida State Board of Dental Examiners will meet in Jacksonville June 21, 23 and 24, 1913.

Applicants for examination must be graduates of a reputable dental school. Examinations will be both practical and theoretical. Practical examination will be one gold filling, one amalgam filling in the mouth, one post crown, and upper and lower set of teeth, set up and articulated. Theoretical will be on all the branches taught in the dental colleges.

Applicants must furnish all instruments for the work, except soldering appliances and articulators.

Secretary will be glad to meet all applicants at the Seminole Hotel at eight o'clock on the evening of June 20th, for the purpose of examining credentials.

W. G. MASON, Secretary.

Citizens' Bank and Trust Bldg., Tampa, Fla.

Florida State Dental Society.

The next annual meeting of the Florida State Dental Society will be held at Atlantic Beach June 24th to 29th inclusive. A most cordial invitation is extended to all ethical practitioners.

JESSE L. WILLIAMS, Cor. Sec'y.

St. James Bldg., Jacksonville, Fla.

Wisconsin State Dental Society.

On account of the conflicting dates of the National Dental Association, the Wisconsin State Dental Society will hold their meeting July 22, 23, 24, 1913, at Madison, Wis.

O. G. KRAUSE, Secretary.

Wells Bldg., Milwaukee, Wis.

Rhode Island Board of Registration in Dentistry.

The Rhode Island Board of Registration in Dentistry will meet for the examination of candidates at the State House, Providence, R. I., Tuesday, Wednesday, Thursday, June 24, 25, 26, 1913. Application blanks and particulars may be obtained from

ALBERT E. SEAL, Secretary.

27 Tyler Bldg., Pawtucket, R. I.



Alabama Board of Dental Examiners.

The Alabama Board of Dental Examiners convenes in Birmingham, Ala., Thursday, June 5th, 1913, in the Metropolitan Hall, at 9 A.M.

The requirements for a license are as follows:

Each applicant shall be twenty-one years old, of good moral character, and hold a diploma from a reputable dental college.

Written examinations in theory will be given on the following subjects: Operative Dentistry, Orthodontia, Oral Surgery, Anatomy, Physiology, Chemistry, Materia Medica, Anæsthesia, Pathology, Therapeutics and Etiology, Histology, Prosthetic Dentistry, Metallurgy and Oral Hygiene.

In practical work: Inserting one gold and one amalgam filling, construction of bridge using first molar, shell crown and Richmond cuspid crown as abutments, porcelain dummies, first and second bicuspids, one posterior Steele facing accepted, assembling and soldering to be done in presence of one or more members of Board. Inserting one approximo-occlusal gold inlay in sixth-year molar, either in mouth of patient or on an articulator, natural teeth set in model with occluding teeth, cavity prepared in presence of one or more members of Board.

Examination fee, \$10.00.

Self-addressed stamped envelope must accompany letters of inquiry.

Applicants must be present when examination begins.

W. E. PROCTOR, Secretary.

Sheffield, Ala.

Northern Indiana Dental Society.

The twenty-fifth annual meeting of the Northern Indiana Dental Society will be held at the steel city of Gary, September 23, 24 and 25, 1913.

W. LEROY MYER, Secretary.

Rensselaer, Ind.

Virginia State Dental Association

The next annual meeting of the Virginia State Dental Association will be held in conjunction with the Southern Branch of the National Dental Association at Old Point Comfort, Va., July 22, 23, 24, 1913.

C. B. GIFFORD, Cor. Secretary.



Ohio State Dental Society.

The 1913 meeting of the Ohio State Dental Society will be held at Toledo, December 2, 3 and 4, 1913.

This meeting will be an innovation. It will mark the beginning of a new epoch in State dental meetings.

Nowhere at any time has there been planned a meeting like this. Fields heretofore untouched will be opened at this meeting. Men of national and international reputation will be in attendance and present subjects along the lines of scientific research, systemic treatment and preventive measures of incalculable value to the dental profession.

The clinics will also mark a new epoch—only fifteen clinicians, men who have attained the highest proficiency in their respective fields, will be here. The unit system will be used and every dentist in attendance will hear and see all that each clinician says and does.

Toledo is on the main line between New York and Chicago, and has the finest restaurants, hotels, theaters, between these two great centers. Toledo is known as the Golden Rule City. Our police carry no clubs—they apply the golden rule. Come and see it in operation. No dentist need stay away on account of the police.

The Commerce Club, occupying the two upper top floors of the sixteen-story Nicholas Building has graciously extended the privileges of the club to visiting dentists.

Exhibitors desiring to secure space, and all others interested should address,

COMMITTEE LOCAL ARRANGEMENTS.

718 Spitzer Building.

Minnesota State Dental Association.

The thirtieth annual meeting of the Minnesota State Dental Association will occur in Masonic Temple, Minneapolis, Friday and Saturday, June 13-14, 1913.

Every phase of dentistry will be presented by men of unquestioned ability; from Dr. Raper, of Indianapolis, with stereopticon lecture on treatment of root canals to the effect of pathological conditions of the mouth on systemic conditions, which will be presented by Dr. C. H. Mayo, of Rochester, whose name is familiar wherever medicine is practiced. A large manufacturers' exhibit will round out what we expect to be an unusually large meeting of the organization.

For information address

BENJAMIN SANDY, Secretary.

636 Syndicate Bldg.



Michigan State Board of Dental Examiners.

The next regular meeting of the Michigan State Board of Dental Examiners will be held at the dental college, Ann Arbor, commencing Monday, June 16th, at 8 A.M., and continuing through the 21st. For application blanks and full particulars address

F. E. SHARP, Secretary.

Port Huron, Mich.

North Dakota State Board of Dental Examiners.

The next regular meeting of the North Dakota State Board of Dental Examiners will be held in Fargo, July 8, 9, 10, 11, 1913. For further information address

F. A. BRICKER, Secretary.

Fargo, N. Dak.

Virginia State Board of Dental Examiners.

The annual meeting of the Virginia State Board of Dental Examiners, for the examination of applicants and other business of the board, will be held in the city of Richmond, Va., the second Tuesday in June, 1913 (June 10th). For further particulars address

DR. J. P. STIFF.

Fredericksburg, Va.

Idaho State Board of Dental Examiners.

The Idaho State Board of Dental Examiners meet in Boise, Idaho, at the State Capitol Building, Monday morning, July 17, 1913.

ALBERT A. JESSUP, D.D.S., Secretary.

Box 1414, Boise, Idaho.

New Jersey State Dental Society.

The forty-third annual convention of the New Jersey State Dental Society will be held in the Beach Auditorium, at Asbury Park, N. J., July 16, 17 and 18, 1913, beginning on Wednesday, July 16th, at 10 A.M.

Oral Hygiene and Prophylaxis will be made a special feature. There will be essays on Nitrous Oxide and Oxygen Anesthesia and Analgesia and Extraction of Teeth. These essays will be illustrated with moving pictures and stereopticon slides and will be further exemplified in the clinics.

All ethical practitioners of dentistry and medicine will be accorded a hearty welcome.



The exhibit of modern dental appliances and the latest in office and laboratory equipment will be in charge of Dr. William H. Gelston, 40 North Thirtieth Street, Camden, N. J., who will be glad to furnish information regarding rates and space still available. Early application from those desiring to exhibit with us this year will be greatly appreciated.

The programs will be ready July 1st and will be mailed to all those sending their names and addresses to the secretary.

EDWIN W. HARLAN, D.D.S., Secretary.

47 Crescent Ave., Jersey City, N. J.

Dentists Legalized to Give Anæsthetics.

Editor ITEMS OF INTEREST:

DEAR SIR:—The Legislative Committee of the Ohio State Dental Society takes a pardonable pride, we believe, in telling the dental profession through the ITEMS OF INTEREST that the dentist's authority has been widened here in the State of Ohio by the passage of the Senate Bill No. 220. Said bill legalizes the dentist to practice anæsthetics for any purpose. Hitherto a construction of the medical practice law limited the dentist's right to give general anæsthetics only for dental operations. Under the new law a dentist has the right to administer anæsthetics for a physician or surgeon for all sorts of major or minor operations. This extended power was asked for by the organized physicians of this State as well as by the dentists, and the work that has been done this winter by the dentists of the State through the Legislative Committee has only cemented more firmly the bonds of fraternal friendship that already existed between the profession of medicine and dentistry.

W. I. JONES,
Chairman Legislative Committee.

